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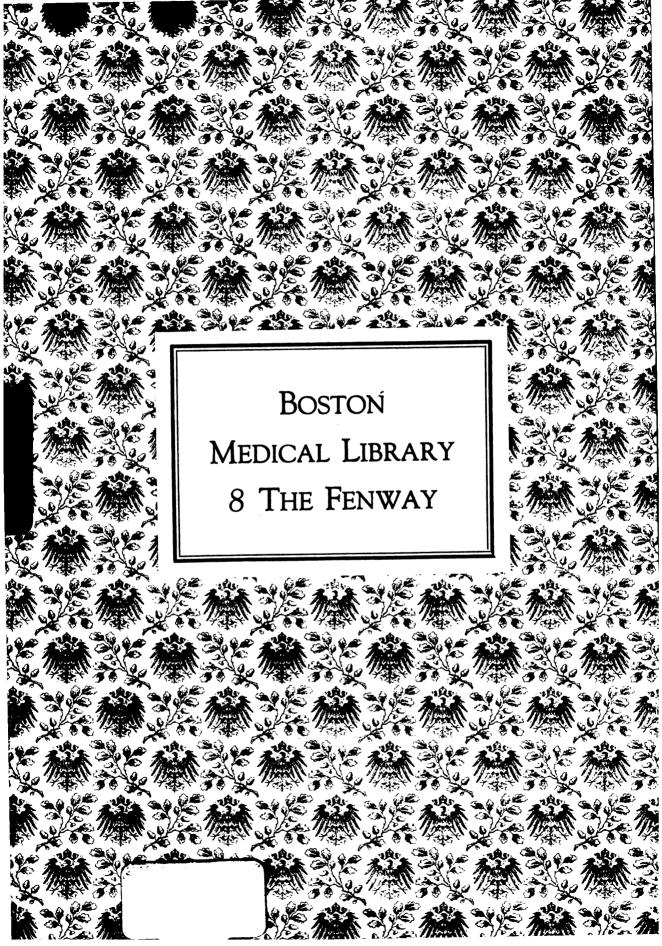
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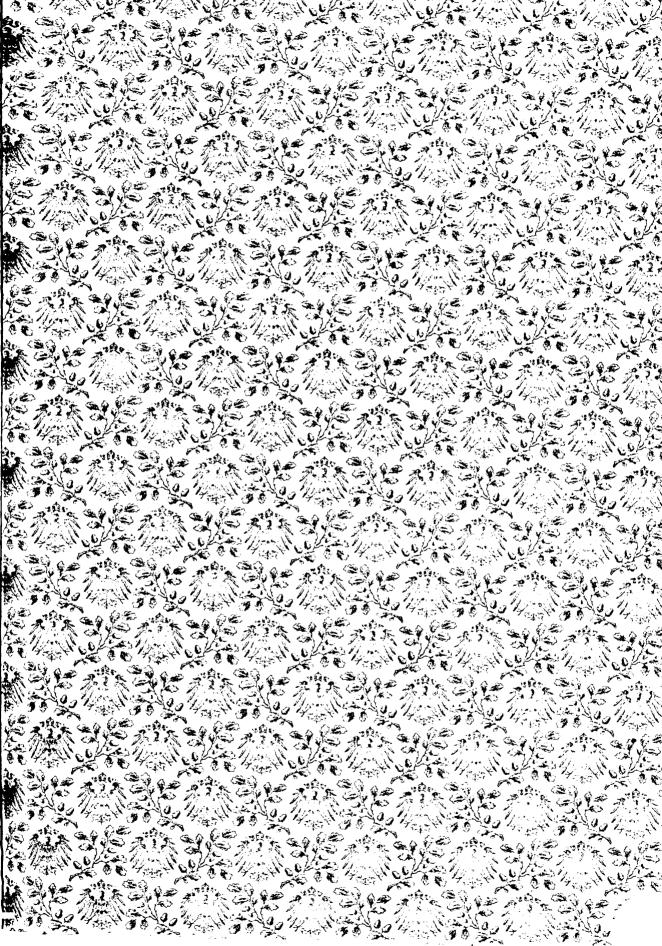
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#### THE

# THERAPEUTIC GAZETTE

**INCORPORATING** 

#### MEDICINE AND THE MEDICAL AGE

#### A MONTHLY JOURNAL

OF

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## THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

Whole Series, Vol. XXXVI.

DETROIT, MICH., JANUARY 15, 1912.

Third Series, Vol. XXVIII, No. 1.

#### ORIGINAL COMMUNICATIONS.

#### THE INFLUENCE OF CAFFEINE ON MENTAL AND MOTOR EFFICIENCY.1

BY H. L. HOLLINGWORTH, PR.D.,

Instructor in Psychology, Barnard College, Columbia University, New York.

The conclusions to be summarized in this paper are the result of a very elaborate and carefully conducted series of experiments, which can be but briefly described in this connection. For complete description of the investigation the reader is referred to the writer's forthcoming articles in the American Journal of Psychology, the Psychological Review, and to a monograph soon to appear as a number of the Archives of Psychology (Columbia Contributions to Philosophy and Psychology), Science Press, New York. R. S. Woodworth, Editor.

Briefly stated the purposes of the investigation were as follows: To determine both qualitatively and quantitatively the effect of caffeine on a wide range of mental and motor processes by studying the performance of a considerable number of individuals for a long period of time, under controlled conditions; to study the way in which this influence is modified by such factors as the age, sex, weight, idiosyncrasy, and previous caffeine habits of the subjects, and the degree to which it depends on the amount of the dose and the time and conditions of its administration; to investigate the influence of caffeine on the general health, on the quality and amount of sleep, and on the food habits of the individual tested; to inquire into the value and adaptability of a considerable array of simple tests with a view to their standardization for the purpose of pharmacodynamic research; and, finally, to

<sup>1</sup>Read before the Section on Medicine of the College of Physicians of Philadelphia, Oct. 23, 1911.

accumulate data on the effects of practice, fatigue, diurnal variations in efficiency, the physiological limit, individual and sex differences, and various other allied topics growing out of such an extended series of tests on a large number of individuals.

Concerning the experimental technique practically nothing can be said in this short paper. Until the publication of fuller reports the reader must accept the writer's simple assertion that the procedure was characterized throughout by the most rigorous scientific method and precaution. Carried on in a specially equipped laboratory, with the aid of six competent assistants and sixteen subjects, of both sexes and of wide range of ages, engaged for full-time service for a period of forty days, the experiments were planned so as to give reliable information on all the points mentioned in the preceding paragraph. By the use of control squads, and of control doses on all members of the caffeine squads, tests were made on capsules and solution doses, taken at various times of day. The form of caffeine used was the alkaloid, two different commercial brands being employed as a further check and control. The control dose was, for capsules, sugar of milk; for solutions, sodafountain syrups indistinguishable in taste from the caffeine and syrup solution. Further control tests were made without the use of any dose whatever. No subject knew, throughout the investigation, whether or when he received caffeine. On three successive days all subjects were tested continuously from 10 A.M. until 10 P.M. On the remaining 37 days they were tested five times daily on all tests, each session requiring one hour's continuous work.

The conclusions which follow are based on a careful study of over 76,000 measurements and over 800 efficiency curves. The impossibility of describing in any brief way the methods by which these data were accumulated will be apparent. The character of the tests can again be but briefly pointed out. Chief among them were the following:

#### THE TESTS.

- 1. The steadiness test. A measure of the tremor in the extended arm. Measure—the number of movements of a stated magnitude in one minute.
- 2. The tapping test. The time required to execute 400 taps with forearm, using elbow as fulcrum. Measure—time required for first 200, for second 200, and for total.
- 3. The coördination test. One hundred bull's-eye strokes with hand stylus at three small holes arranged to form the corners of an equilateral triangle. Measure—time required for 100 successive hits.
- 4. Typewriting test. Daily work copying 19 pages of Ruskin's "Sesame and Lilies." Measure—time, corrected errors, and uncorrected errors.
- 5. Color-naming test. Naming correctly 10 colors, each repeated ten times in random order, in ten rows of ten each. Measure—time.
- 6. Calculation test. Adding 17 mentally and correctly to each of a series of 50 two-place numbers. Measure—time required.
- 7. Opposites test. Giving the antonym of each of 50 words, occurring in random order, the order changed at each trial. Measure—time.
- 8. Cancellation test. Marking out all the 2's, 3's, 4's, 7's, and 9's in a standard test blank. Measure—time.
- 9. The familiar size-weight illusion. Measure—the amount of the illusion.
- 10. Discrimination. Reaction time for discrimination of red and blue disk, reaction with appropriate and predetermined hand. Measure—average of 10 reactions at each trial; unit, .001 sec.

- 11. Quality of sleep, classified as usual, better than usual, or worse than usual.
- 12. Amount of sleep. Estimated number of hours sleep each night.
- 13. General health and feeling of well-being.

It should be remarked, before passing to a statement of results, that all the subjects lived according to a prescribed régime as to food, use of drugs, exercise and regularity, and on the three intensive days all were fed at the same table and remained in the laboratory throughout the whole period of the tests. All unavoidable irregularities and departures from the prescribed régime were reported, and in the case of the female subjects the beginning and end of the menstrual period were noted.

I now proceed to a very brief statement of the character of the caffeine influence on efficiency in each of the above mentioned tests.

The Steadiness Test.—After 1 to 4 grains of caffeine a slight nervousness ensues, which is not apparent until several hours after the dose. After 6 grains there is pronounced unsteadiness, which begins to be manifested within an hour or so after the dose but which is still greater after three or four hours. Such unsteadiness as is produced is less clearly shown when the caffeine is taken in the forenoon or at lunch-time than when it is administered in the afternoon unaccompanied by food substance. These results are exactly paralleled by the influence of caffeine on the quality and quantity of sleep and suggest an intimate relationship between the measurable tremor produced by caffeine on a given muscle group and the evident nervous excitement that is responsible for the insomnia produced by large doses of the same substance.

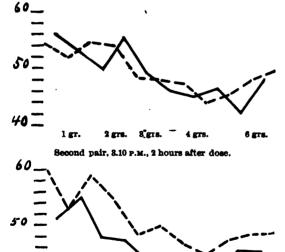
The Tapping Test.—The typical effect of caffeine on a motor process such as that involved in the tapping test seems to be stimulation, which is sometimes preceded by a brief and slight initial retardation. The magnitude of the stimulation varies directly with the size of the dose and is relatively slight when the caffeine is taken in the

forenoon. The effect begins in from forty-five to ninety minutes after the administration of the dose, the period being shorter for large doses and longer when the dose is taken along with food substance. The effect persists for from one to two hours for doses of 1 to 3 grains and as long as 4.5 hours for 6 grains. There is no secondary or after-effect shown on the tapping test within the seventy-two hours over which the effect of single doses was traced.

The Coördination Test.—The effect of small amounts of caffeine on this test is stimulation, while that of medium amounts is retardation. The largest dose also produces retardation, but there is some evidence that this effect is subsequent to a slight initial stimulation. In all respects these results resemble closely those yielded by the typewriting test, which is a similar test of coördination.

PLATE I.—Tapping Rate (Subject No. 10).

First pair, 10 a.m., 3 hours before dose.



These curves show the influence of caffeine on the tapping test. The dotted line represents records made on control days, and the solid line the records on caffeine days. The first pair of curves gives the records of one subject at the 10 A.M. period, before any dose was taken. The second pair gives the records made at the 3.10 P.M. period, two hours after the dose. Before the dose the caffeine and control curves coincide. After the dose the caffeine curve is consistently lower, showing stimulation for all except the 1-grain doses. No after-effect was found. Two trials were made for each size of dose.

2 grs.

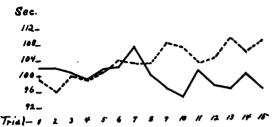
Typewriting.—The speed of performance in typewriting is quickened by small doses

(1 to 3 grains) and retarded by larger doses (4 to 6 grains). The quality of the performance, as measured by the number of errors, both corrected and uncorrected, is superior for the whole range of caffeine doses to the quality yielded by the control days. Both types of errors seem to be influenced to about the same degree. The increase in speed is not gained at the expense of additional errors.

The Color-naming Test.—In this test there is clear indication of stimulation for the whole range of doses employed. But in all cases this stimulation is more apparent after the smaller doses than after the larger. The effect begins in about 2 to 2.5 hours after the capsule has been taken, and is still present three to four hours later. There is no evidence of any after-effect on the following day. Of incidental interest is the considerable retardation produced in this test by eating the evening meal just before the trials.

The Calculation Test.—All squads reveal a most pronounced stimulation following This stimulation amounts to a considerable per cent of the initial performance (10 to 20 per cent), whereas the normal tendency on control days results in a corresponding degree of fatigue instead. The total effect of caffeine is greater in this case than with any of the other tests. The stimulation begins about one hour after the dose, when the caffeine is taken in solution with syrup and carbonated water, and about 2.25 to 2.5 hours after when the dose is in capsule form. The effect is still present at the close of the day's work, some six to seven hours after the dose. No evidence of any secondary depression is found. Instead, the morning after the dose shows, without exception, a clear improvement over the work of the preceding morning. This improvement is not due to practice, for it is not found between control days. In fact there is considerable justification for supposing that the influence of the caffeine dose which is seen to be unmistakably present six or seven hours after administration is still operative on the following day. This operation might be in the form of a real persistence of stimulation or in the form of increased efficiency due to skill or disposition acquired during the stimulation of

PLATE II.—Calculation (Squad III, Experiment B).



This pair of curves gives the records made in performing 100 simple additions at each trial. In each case a capsule was taken after the sixth trial. On the day represented by the dotted line this capsule contained only sugar of milk. On the day represented by the solid line the capsule contained is grains of caffeine citrate. This is the record of a squad of four people who began working at 10 a.m. and worked without intermission (except half an hour for each meal) until 10 p.m., performing tests continuously. Contrast the considerable fatigue shown on the control day with the stimulation present on the caffeine day. Similar trials were made for two days after the caffeine dose. No indication of any after-effect was found.

the preceding day. The former hypothesis would not be inconsistent with the great stimulation shown in this test, and I think it is also in agreement with the data available concerning the length of time caffeine may remain in the system after ingestion. If the effect be taken to be a real persistence of stimulation, one is at once curious to know why the effect on motor processes is so much more transient than that manifested in these more strictly mental performances.

Quality and Amount of Sleep.—Small doses of caffeine alkaloid (1 to 4 grains), taken either in the pure form or accompanied by small amounts of syrup, do not produce appreciable sleep disturbance except in a few individual cases. Doses larger than these (6 grains in the present experiment) induce marked sleep impairment with most subjects, though even here a few individuals show complete resistance to its These effects are greatest when the dose is taken on an empty stomach or without food substance, and when it is taken on successive days. This latter fact may point toward a cumulative effect. The effect of the drug does not seem to depend on the age, sex, or previous caffeine habits of the individual, but varies inversely with body weight. These conclusions hold for both the quality and the amount of sleep.

Cancellation Test and Size-weight Illusion.—So far as the examination of the data has gone up to date, neither of these tests seems to be in any way modified by caffeine. In the first case there is no apparent difference between performance on control days and that after the caffeine doses. In the case of the size-weight illusion, there is a gradual increase in the amount of the illusion as the experiment progresses. But this increase is apparently as great with the control squad as with the other individuals. Nor do caffeine days differ from control days.

The Opposites Test.—The influence of caffeine on such mental processes as those involved in the performance of the opposites test is stimulation, which begins one to two hours after the syrup and 2.5 to three hours after the capsule dose. The amount of this stimulation, at its maximum, varies from 15 per cent absolute stimulation to mere counterbalance of a normal fatigue tendency of about the same amount. general the greatest effect results from the smaller doses. The stimulation is clearly present at the close of the day, as much as six to seven hours after the dose. all experiments and with all squads there is evidence that the caffeine influence is still operative on the following forenoon, twenty-four hours after the administration of the dose.

Discrimination and Choice.—S m a 11 amounts of caffeine tend to produce retardation in discrimination time, this retardation being accompanied by a greater number of false reactions. The false reactions appear to be caused by a preliminary briskness produced by the caffeine, and the retardation in reaction time to be caused by a voluntary caution in the attempt to eliminate the false reactions. This is a test in which stimulation does not make for efficiency except after long practice. Larger amounts of caffeine produce, within two hours, a stimulation so great that the retardation following smaller doses does not appear. Greater familiarity with the test may also contribute to this effect. caffeine effect seems to be very persistent in this test, and traces of it are to be found on the following day. When retardation is present it does not appear until very late, whereas the stimulation comes fairly quickly. This again appears to be due to the size of the dose, the larger amounts acting more quickly. The caffeine does not seem to modify the variability of the reaction times. When the dose is taken in the morning no effect can be consistently made out. When it is taken along with the midday meal the retardation after small doses tends to disappear. The magnitude of the caffeine influence varies inversely with body weight, as in most of the other tests.

General Health and Feeling of Wellbeing.—Allowance must be made for the tendency to headache and nervousness reported even by members of the control squad. The strain involved in the repeated completion of the series of tests at the highest possible level of performance was considerable. Most of the subjects reported more or less strain directly traceable to the strenuous character of the tests themselves. Consequently only such symptoms can be securely taken to indicate caffeine effect as are clearly present on caffeine days only, or are unusually prominent on those days. Tendency to headache, nervousness, dizziness, feverishness, and occasional sleeplessness are distributed in a fairly uniform way throughout the reports of the control squad. Bearing these facts in mind the following seems to be a fair statement of the effects of caffeine on the general health and feeling of well-being in the case of the subjects participating in the present experiments. Evaluation of their significance is left to readers who have fuller medical knowledge than the writer.

Squad II (weights 144, 160, 175), taking pure caffeine alkaloid doses three days in succession (alternating with three control days), at 10.30 A.M., without food substance. No effect up to the time of the

4-grain doses. After 4- and 6-grain amounts: nervousness, feverishness, headache, irritability, and disturbed sleep. Much the same thing may be said of another subject who took doses at 8.30 A.M., working independently of the squads.

Squad III (weights 130, 159, 193), taking pure caffeine alkaloid on alternate days, with increasing doses, with the midday lunch. No sleep impairment at all except in the case of the woman after the 6-grain doses. Nervousness and heartburn or stomach pains after doses of 3 grains or over. Dizziness and headache after 6-grain amounts.

Squad IV, taking the doses on alternate days in mid-afternoon on an empty stomach. Male subjects (weights 157, 174): No influence up to the time of the 4-grain doses. For larger amounts nervousness and dizziness or headache. Sleeplessness after 6grain amounts only. Female subjects (weights 105, 110, 125): Dizziness or lightheadedness, attacks of perspiration, numbness or coldness of extremities, nervousness, drawn feeling in throat and head, and sleeplessness, unusually prominent in the case of the two slightest subjects after doses larger than 2 or 3 grains. In the case of the heaviest of the three the symptoms do not appear in any unusual degree until after the 4- or 6-grain amounts, as in the case of the men. The apparent sex difference found with this squad is probably entirely a function of body weight.

The subjects quite uniformly report improvement in health, spirits, and general efficiency at the close of the experiment. This is perhaps due to the regular régime of life followed during the forty days. Those who had given up the use of caffeinic beverages during the experiment and for several days before its beginning do not report any craving for the drinks as such, but several expressed a feeling of annoyance at not having some sort of a warm drink with breakfast. Two subjects report a gain in weight, two a loss, and the rest either report no change or are unable to state reliably.

The two chief factors which seem to

modify the degree of the caffeine influence, both with respect to performance in the various tests and to effect on sleep and general health, are body weight and the conditions of administration of the dose (time of day and presence or absence of food substance). The detailed results of a study of the quality and amount of sleep correlate closely with these indications as to general health.

## THE EFFECTS OF CAFFEINE ON THE CIRCULATORY AND MUSCULAR SYSTEMS.

BY HORATIO C. WOOD, JR., M.D.,

Professor of Pharmacology and Therapeutics in the Medico-Chirurgical College of Philadelphia.

. Most of the works on Pharmacology with which I am familiar state that caffeine causes a marked rise of blood-pressure with an increase in the rate of the pulse, and that the rise of blood-pressure is due in part to the increased heart action—the result of an increase in both the force and rapidity of the beat-and in part also to a contraction of the blood-vessels brought about through a stimulation of the vasomotor center in the medulla. There are, therefore, three changes in the circulation which have been supposed to follow the use of caffeine. namely, an increase in the pulse-rate, a strengthening of the force of the cardiac contractions. and a stimulation of the vasomotor center.

The studies of the effects of caffeine on men have not been, however, in harmony with the above conclusions drawn from experiments upon the lower animals—thus, for instance, in the elaborate monograph of Leblond it was found that the pulse-rate was uniformly reduced by doses of ten to fifty centigrammes (11/2 to 2 grains), the average rate in his experiments before giving the drug being 79 per minute, and 60 per minute after its administration. Geiser likewise found a uniform retardation of the pulse-rate, although not quite as marked as did Leblond. My own experiments have also showed a consistent if not great slowing. The few studies of the human bloodpressure under the influence of caffeine have yielded results not absolutely con-Leblond in a single test made with Potain's sphygmomanometer found a rise of 20 millimeters from four grains of caffeine; it may be remarked that this experiment was performed when the estimation of human blood-pressure was a much less common procedure than now, and that Potain's apparatus is to-day generally conceded to be inaccurate. Geiser in some half-dozen observations with the Riva-Rocci sphygmomanometer obtained rises of from five to six millimeters in the blood-pressure.

My own experiments on the effect of caffeine on the human circulation were made upon four subjects, two of whom were moderate drinkers of caffeinic beverages and two of whom were almost total abstainers. In all of these experiments the subject had abstained from caffeine for at least six hours previous to the experiments, and in most of them for much longer periods. Some of the observations were made by my friend Dr. F. S. Ferris, so that the element of personal error was excluded. For estimating the blood-pressure we used either the Tycos or the Faught apparatus. The experiment was carried out as follows: During the whole course of the experiment-from two to three hours-the subject remained in a recumbent posture on a sofa. The measurements of the bloodpressure were made at intervals of from ten to twenty minutes, at each observation the systolic and diastolic pressures and the pulse-rate being recorded. In one or two instances no drug of any kind was given during the whole evening in order to determine whether the various psychological factors involved, such as the continued recumbency and the monotony, had any influence on the circulation, but generally after three or four observations a capsule

was administered, sometimes containing caffeine and sometimes containing equivalent amount of starch, the subject not knowing which he was receiving. The doses of caffeine employed ranged from 11/2 to 6 grains. In passing I may call attention to the extraordinary influence which psychological factors play in the human bloodpressure. It was found that if the patient engaged in conversation during the taking of the pressure the latter might be elevated 20 millimeters, or if some one entered the room there was a perceptible increase in the blood-pressure; the pulse-rate was found to be much less influenced by these conditions. With proper precaution the bloodpressure remained remarkably constant, as was shown both in the experiments in which nothing was done and in those in which the patient received the starch capsule. unnecessary to go over in detail the individual experiments, and I shall give merely one sample and a table presenting the averages of all the observations on each subject.

TABLE I.

Showing the details of two studies on the human bloodpressure.

			SUBJE	OT I.
Time.	B. P.	P. P.	P. R.	
Begin.	84	27	58	
0.15	88	22	54	
0.40	87	21	50	Starch 11/2 grains at 0.25.
1.00	90	29	58	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
1.10	84	28	=	
1.20	91	22	56	
Time.	B. P.	P. P.	P. R.	
Begin.	88	28	57	
.15	84	84	60	
.45	84	80	55	Caffeine 6 grains at 0.20.
1.00	98	26	54	
1.15	98	26	54	
1.80	96	22	54	
1.45	97	25	52	
2.10	96	19	54	
2.20	95	22	58	
2.40	97	22	54	
2.50	96	23	58	
8.05	96	22	58	
5.00	-0		uno .	

Time is expressed in hours and minutes. B. P. indicates man blood-pressure, obtained by adding together the diastolic and systolic pressures and dividing by 2; P. P. or pulse-pressure is the difference between the systolic and diastolic pressures; P. R. is the pulse-rate per minute.

TABLE II.

The averages of all the observations on the effects of casseine on circulation of human beings.

	Normal.		One-half hour after caffeine.		One hour after caffeine.		Two hours after caffeine.	
Subject 1 Subject 2 Subject 8 Subject 4	B.P. 85 94 111 98	P.R. 62 86 58 81	B.P. 87 95 111 98	P.R. 57 79 52 75	B.P. 92 98 112 97	P.R. 56 81 52 78	B.P. 94 91 112 100	P.R. 56 84 51 71
Average	97.0	70.5	97.8	65.6	99	65.4	99.2	65.4

From the above table it will be seen that in none of the subjects was there any marked rise of the blood-pressure, the average rise for the whole series being but 2.2 millimeters. In all of them, however, there was a reduction in the pulse-rate: in two very distinct reductions. These figures, it must be remembered, represent averages and are, therefore, much more reliable than if they represented individual experiments, but it also must be remembered that the results in the individual experiments with each subject were remarkably concordant: thus in subject No. 1, for example, the rises in blood-pressure in three caffeine experiments were respectively 8, 6, and 9 millimeters, and in subject 3 there was not a variation of more than three millimeters from the normal either way in any of the experiments.

The essential similarity between the circulation of the dog and that of man, especially in response to drug influence, has been so firmly established that such a discrepancy between the effects upon the circulation in the lower animals as described in text-books and those observed in man seems a priori highly improbable, and it seemed to me, therefore, worth while to attempt to find the explanation of the dif-After a careful review of the literature upon the subject as well as experimental study, I have come to the conclusion that the differences described are due to two causes, first the doses employed, and secondly the methods of experimental investigation which have been used in studying the effects upon animals.

Many of the experiments upon the lower animals have been made after the administration of large doses of chloral or atropine or after severance of the vagi or some other similar procedure, which would very evidently destroy the normal response of the system to drug influence. In the majority of those investigations which have been made on animals in an approximately normal condition the doses of caffeine administered have been enormous. For instance, Binz gave intravenously 0.10 gramme per kilo, which would be equivalent to a dose of

over 100 grains for an ordinary man. Reichert employed doses ranging from 5 to 50 milligrammes per kilo-equivalent to doses of 5 to 50 grains for a man-but in only one of his experiments was a dose of less than 10 milligrammes per kilo administered. It is worthy of note that in the single experiment in which Reichert used a small dose there was a reduction in the pulse-rate from 126 to 102 per minute, while in all other instances he found the pulserate to be greatly increased. I have been unable to find any recorded experiment of an increase in the pulse-rate in the intact dog following the injection of less than 10 milligrammes per kilo.

In four experiments which I have made upon the dog with doses of caffeine corresponding to those ordinarily used in man, in only one did the drug fail to slow the pulse, although the changes in the heartrate were insignificant in comparison to the influence of such remedies as digitalis or veratrum; the effect upon the pulse-rate was precisely the same as that in human beings. When, however, I administered larger doses of caffeine the rate of the pulse was often greatly increased.

Concerning the effect of caffeine upon the blood-pressure the results of different investigators have been somewhat at variance; thus Reichert never obtained in any of his experiments a marked elevation, and reached the conclusion that caffeine is not a circulatory stimulant. Binz on the other hand obtained from the drug very decided rises in pressure. Maki obtained sometimes slight rises and sometimes slight falls from the pressure.

Sollman and Pilcher in a recently published contribution report that the general tendency of caffeine upon the blood-pressure was with all doses downward, although after quantities of less than 20 milligrammes per kilo the average fall was insignificant, and in a considerable number of individual instances there was a distinct rise.

In my own experiments doses of 2 to 5 milligrammes per kilo caused in three experiments slight rises of pressure—8 to 20

millimeters—and in one instance a fall of 7 millimeters.

It is manifest that with such insignificant rises in the general arterial pressure unless the heart is greatly weakened there cannot be a very high degree of vascular constric-Since nearly all observers are in accord in stating that the extent of the heart contractions is increased rather than diminished by caffeine, it is manifest that there can be no great degree of vasomotor stimulation. I cannot find sufficient scientific evidence for the statement that caffeine causes constriction of the blood-vessels. On the contrary Loewi, in plethysmographic experiments obtained not a diminution but rather an increase in the caliber of the intestinal vessels.

The results of my study of the action of caffeine on the circulation may be briefly summed up as follows: In therapeutic doses caffeine has comparatively little influence on the circulation, but it slightly increases the force of the cardiac contractions, thereby causing some elevation in the general pressure. The pulse-rate is usually not markedly affected, but such change as is produced is rather a retardation than an acceleration.

TABLE III.

Effect of caffeine on circulation of dog. Weight of dog,

•			5	kilogrammes.
.9	ರ			-
Kin	9	B. P.	P. R.	
		184	128	Inject caffeine .02 gramme.
0	30	185	129	
8	80	180	114	
10	Õ	150	105	Inject caffeine .06 gramme.
10	80	148	117	•
12	0	148	108	
16	Ō	140	105	Inject caffeine .08 gramme.
16	80	145		
17	0	144	108	
20	0	140	108	Inject caffeine 0.12 gramme.
21	0	140	115	
28	0	145	120	
28 26	0	140	146	Inject caffeine 0.16 gramme.
27	0	148	146	
30	0	15)	_	
85	0	152	144	Inject caffeine 0.16 gramme.
85	30	145	156	
85	40	_	-	Heart stops beating.

Muscular Systems.—In discussing the effect of caffeine upon the movements of voluntary muscles I shall confine myself entirely to the influence of physiologic doses; the peculiar state, similar in its appearance to post-mortem rigor, induced in the muscles by large quantities of the drug has no bearing upon its effect when used in quantities which are likely to be ingested

by human beings under any condition. I do not believe it is possible to produce this caffeine rigidity in animals except by its local application, because the dose which would be required is so large that it would certainly prove fatal.

There is a wide-spread popular belief that caffeinic beverages increase the capability for muscular exertion, a belief which has been confirmed by ergographic experiments on men. Hoch and Kraepelin experimented on four subjects with the most careful attention to details in the following manner: The subject lifted a weight every second until complete exhaustion of the muscle—that is, until he was unable to lift it again; after an interval of ten minutes to allow recuperation the performance was repeated, and then a dose of caffeine administered. In two of the four subjects experimented upon there was an immediate increase after caffeine in the work performed despite the fatiguing effect of the trials which always preceded its administration, and in both the other subjects there was marked retardation of the rapidity of the muscle fatigue as compared with the normal. In one subject, who showed the least evidence of any stimulant action of caffeine, a somewhat different method of investigation was employed. This man was given on alternate days a dose of caffeine in the morning and his muscular capacity tested every hour or two throughout the day, and it was found that uniformly on the caffeine days more muscular work was performed than on the control days. Schumburg likewise found that caffeine increased the amount of muscular work performed in ergographic experiments. It is evident that this increase in muscular energy may be the result either of a greater activity in the psychomotor area of the brain, of higher irritability in the motor centers in the spinal cord, or of a stimulant effect upon the muscle substance, or of a combination of these factors. I know of no satisfactory method of testing the functional activity of the motor cortex of the cerebrum, but I have endeavored to determine whether or not there was any

change in either the spinal cord or the muscle itself which would account for the increased power under the influence of this drug.

Experiments upon the lower animals have shown that at least with large doses of caffeine there is a very marked stimulation of the motor cells of the spinal cord, which in the frog is sufficient to cause convulsions resembling those of strychnine poisoning, although usually much less vio-In the very few cases of human caffeine poisoning which have been reported convulsions have not been noted, and it seemed to me that it would be, therefore, of much interest to determine whether it was possible to demonstrate any effect of caffeine upon the reflex centers of men from such doses as may be ordinarily employed. For this purpose I used the Lombard kneeierk apparatus. In using this apparatus the subject lies upon the side, the thigh firmly fixed to a standard, and the foot supported at the ankle in a swing so that it can move easily at the knee-joint. To the heel is attached a string which pulls a lever writing upon a smoked surface. To afford an absolute constant mechanical impulse against the patella tendon a hammer is employed which can be allowed to fall through different parts of the arc of a circle. The force of the blow is absolutely constant, and with care to see that the hammer strikes exactly at the same spot every time, the size of the knee-jerk is remarkably constant. Four subjects were employed in this series of individual experiments lasting from two to four hours. The patient was usually observed for at least an hour before any caffeine was given in order to be sure that the experimental conditions were satisfactory. The results were most striking. indeed unexpectedly so. In every instance there was a marked increase in the vigor of the knee-jerk beginning usually about twenty minutes after the ingestion of the caffeine, and reaching its maximum in from forty to sixty minutes and remaining above normal throughout the whole course of the experiment. (See Fig. 1.)

Although it is theoretically possible to

attribute this increase in the knee-jerk to a heightened irritability of the muscle, it seems to me much more logical to believe that it indicates a condition of heightened functional activity in the reflex centers of the spinal cord.

My experiments to determine what influence caffeine had upon the muscle itself were performed altogether upon frogs, the species employed being the common leopard frog of the United States. It has been shown by previous investigators that the first effect of caffeine is to increase the irritability of the muscle substance, so that the same strength of electric stimulus calls forth a greater contraction. shown, however, that certain metabolites which are produced in the muscle during activity-which he calls fatigue substances -also increase the irritability of the muscular tissue, and because of the similarity in chemical composition between caffeine and the purin bodies it has been suggested that the increase in muscular activity caused by caffeine is akin to the temporary stimulation produced by fatigue substances. I have, therefore, devoted especial attention to the question of the ultimate results of the caffeinic stimulation—that is, whether the muscle becomes more rapidly exhausted than normal under the influence of the drug.

Two sets of experiments were performed. In one the two gastrocnemi of the frog with their tributary nerves was carefully dissected out, one muscle being placed in a physiological salt solution and the other in a caffeine solution. These muscles after being allowed to soak for varying periods of time were then placed in a moist chamber and connected with an ordinary muscle lever and stimulated at intervals of one second until exhausted. In the other series of experiments the frog was pithed and a ligature tied around one leg, excluding the nerve, thus shutting off the circulation to that extremity, and the caffeine injected subcutaneously; after waiting until its effects were manifest the two muscles and the nerves were dissected out and tested as in the other series of experiments. The idea of having these two different forms of experiments was to see if there was any difference in the action of caffeine when directly applied to the muscle and when carried to the muscle through the circulation. I may say in passing that for equivalent quantities the effects in the two series of experiments were precisely the same.

Various slight modifications, such as the amount of weight with which the muscle was loaded and the interval between the stimulations, etc., were tried, but in the most of the experiments the muscle lifted a ten-gramme weight every second.

If the muscle was soaked in a solution of a concentration of less than 1 to 10,000, or if the frog was given a dose hypodermically of not more than one-tenth milligramme per gramme of body weight, the height of the contractions of the caffeinized muscle was in every instance greater than those of the unpoisoned side, at least temporarily. In some of the experiments the contractions of the caffeinized muscle remained larger than those of the normal until both muscles were completely exhausted.

In most of the experiments the line of descent of the muscle contractions was steeper after caffeine than in the normal. so that eventually the size of the wave became smaller than that of the unpoisoned muscle. It is to be remembered, however, that under the conditions of the experiment, the muscle receiving no nutriment, all the work which was performed before exhaustion must be accomplished on the amount of energy stored up in the muscle substance before the beginning of the ex-Under such conditions larger contractions, which of course means greater work done, must lead to a more rapid consumption of the stored-up energy and consequently a steeper descent in the fatigue curve. The only way to determine whether the primary increase of muscular irritability due to caffeine is similar to that caused by fatigue products is to compare the total amount of work done by the two muscles before they cease to respond at all to the

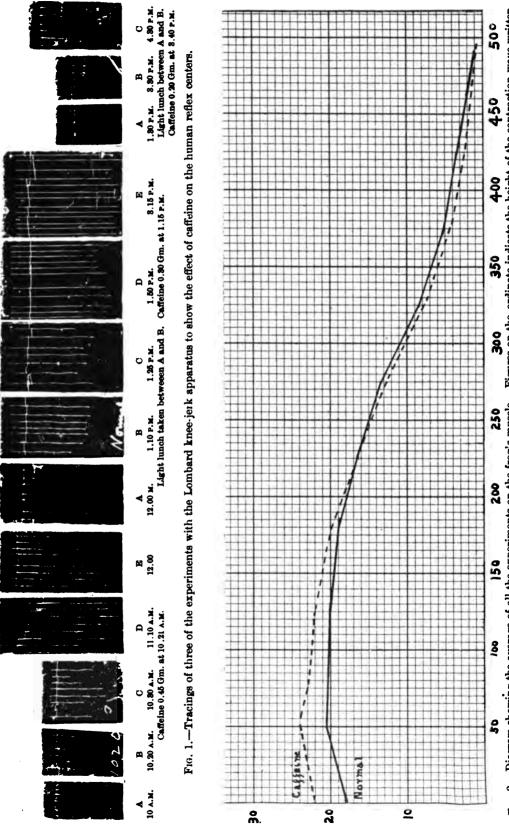


Fig. 2.—Diagram showing the average of all the experiments on the frog's muscle. Figures on the ordinate indicate the height of the contraction wave written Solid line, normal; broken line, caffeine. by the lever; figures on the abscissa the number of times the muscle has contracted.

electrical current. In the curves published by Dr. Lee showing the effects of the socalled fatigue substances upon the muscles, one of the most striking features was the rapidity of the descent in the contractions under the influence of these poisons; the total amount of work accomplished by the muscle is greatly diminished by stimulating it with lactic acid or the other fatigue substances.

Under the influence of caffeine, although after the first two or three hundred contractions the size of the wave is less than normal, yet the difference is not sufficiently great to compensate for the larger contractions in the earlier part of the muscle's labors. In other words, if we add up the total height to which the muscle lifted its load—which is the criterion of the amount of work accomplished—in the great majority of the experiments we find that the balance is in favor of the caffeinized muscle.

In such a method of investigation it is only to be expected that there will be some differences in the results of the individual experiments: for instance, it might be that the muscle on one side would be slightly more powerful than on the other, which would of course influence considerably the result. We can reach just conclusions as to the effects of the drug by considering the series as a whole. We may either compare the number of experiments in which the poisoned and normal muscles, respectively, accomplish the greatest total of work, or we may take the average amount of work of the caffeinized and normal muscles of the whole series. Whichever way we average the results the caffeinized muscle makes the better showing. Out of nine comparative experiments with each muscle, in only two instances did the normal muscle accomplish as much work as the one under the influence of caffeine. In the entire series of experiments the average of the whole amount of work done by the normal muscle was 127.0 milligrammeters and by the caffeinized 132.8 milligrammeters.

The conclusion seems to me, therefore,

inevitable that caffeine not only increases the vigor of the contractions of the muscle but enables it to work more economically that is, to perform more labor on the same amount of energy. It is therefore impossible to speak of any compensatory depression following the primary stimulant effect of caffeine upon the muscle. (See Fig. 2.)

TABLE IV.

Showing the comparative activity of muscles soaked in caffeine and in normal salt solution.

		Normal	Caf- feine 2.5 10,000	Normal	Caf- feine 1 10,060	Normal	Caf- feine 1 20,000
1st 2d	50 50	22.6 24.8	26.5 27.0	18.7 19.2	20.5 21.2	21.2 20.8	26.1 26.0
8d 4th	50 50	23.7 22.0	27.0 23 9	20.4	21.5 19.9	20.7 21.2	23.8 23.8
5th	50	21.2	18.7	19.8	16.2	20.1	22.5
6th	50	16 4	14.1	17.0	9.7	15.4	20.0
7th	50	8.0	7.5	18.1	4.4	10 8	12.5
8th	50	8.9	2.9	7.9	2.8	6.7	8.7
9th	50	1.8	4.5	4.5	1.8	4.8	5.8

These figures represent the height of the contraction wave as marked by the lever. To find the absolute work performed at each contraction divide the figure by four (the multiplication by the lever) and multiply by ten (the amount of weight raised at each contraction).

TABLE V.

Showing effect of hypodermic doses of caffeine on muscle of frog.

	Normal	Caf- feine 1.2 Mgm.	Normal	Caf- feine 1.2 Mgm.	Normal	Caf- feine 1.3 Mgm.
1st 50 2d 50 3d 50 4th 50 5th 50 6th 50 7th 50 8th 50	18.7 18.5 18.4 16.9 11.6 7.2 6.3	26.0 22.4 21.8 19.8 16.0 11.0 6.1 8.6	18.8 19.0 19.5 18.2 15.5 12.2 7.9 8.7 2.5	21.9 21.9 20.6 18.2 11.7 10.7 7.4 4.5 3.5 2.3	18.8 19.8 18.9 16.7 13.4 9.1 6.8 2.9	22.2 21.7 19.3 14.5 11.0 8.5 6.5 4.0
	Normal	Caf- feine 2.5 Mgm.	Normal	Caf- feine 2.5 Mgm.	Normal	Caf- feine 2.5 Mgm.
1st 50 2d 50 8d 50 4th 50 5th 50 6th 50 7th 50 8th 50 9th 50 10th 50	17.0 17.6 18.5 17.2 16.8 13.8 10.7 7.1 5.0 8.9	18.8 18.9 17.6 15.4 12.2 9.5 7.0 5.4 4.6 3.8	17.9 19.4 19.1 19.8 15.5 12.4 8.6 6.3 4.9 8.7	20.9 21.6 22.0 21.9 19.0 15.1 10.8 5.4 2.5 1.8	18.3 19.0 18.3 16.9 14.8 10.5 7.9 6.2 8.6 1.4	21.0 28.0 22.0 20.0 16.8 12.9 9.0 4.5 8.5 2.5

My conclusions concerning the action of caffeine upon the motor system may be summed up briefly as follows: It acts as a stimulant to the reflex centers in the spinal

cord; it enables the muscle to contract more vigorously without producing a secondary depression, so that the sum total of muscular work which can be done by a man under caffeine is greater than that which can be done without it. In closing I cannot resist pointing out how confirmatory of this conclusion is the universal experience of mankind with caffeine beverages. The soldier under the influence of coffee not only walks more briskly at the beginning but finishes the day's march less weary.

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## RECOGNITION AND TREATMENT OF GONORRHEAL INFECTION OF THE UTERUS AND ITS ADNEXA.<sup>1</sup>

BY WILLIAM EASTERLY ASHTON, M.D., Professor of Gynecology, Medico-Chirurgical College of Philadelphia.

By pelvic inflammation in women we mean an infection by bacteria of the uterus and its adnexa and the tissues of the pelvis.

According to American and German authorities 50 per cent of all pelvic infections are due to the gonococcus, and next in order of frequency to the streptococcus and staphylococcus and the colon and tubercle bacillus. A mixed infection may also occur, and it is therefore not uncommon to find the gonococcus associated with other varieties of bacteria in cases of puerperal sepsis.

The recognition of pelvic inflammation of gonorrheal origin is, in general, more difficult and uncertain than when the infection is caused by other organisms. This fact is readily understood when we consider the history of a gonorrheal invasion and the way in which the microörganism behaves and the disease extends.

The diagnosis of gonorrheal infection of the pelvis naturally divides itself from a practical standpoint into, first, the recognition of the invasion of the cervix and uterus, and secondly, the extension of the disease beyond the uterine cavity.

Gonorrhea in woman is usually subacute from the beginning, and in many cases the discomfort caused by the specific inflammation of the urethra is so slight and of such a short duration that later when the pelvic organs are involved the primary condition is overlooked. The disease is, therefore, insidious in character, and any assistance we might hope to have from the history of the patient is often uncertain and misleading.

When the cervix and endometrium are involved the only manifestation of importance is a leucorrhea. There is seldom any constitutional disturbance or local discomfort in the pelvis, and the diagnosis depends upon a microscopic examination of the discharge and what we may possibly glean from the personal history of the patient as being suggestive of a specific infection. If, however, the microscopic examination yields a negative result we cannot unfortunately conclude that the disease is nonspecific, as the gonococci may have disappeared from the discharges and still remain in the endometrium. Again, we should remember that the gonococci become more numerous and active during menstruation and just before and immediately after the period than at any other time, and for this reason the discharges should be examined soon after the monthly flow ceases.

The presence of signs of inflammation in the urethra, in Skene's glands or urethral ducts, or in the vulvovaginal glands, is al-

<sup>&</sup>lt;sup>1</sup>Read before the Kensington Branch, Philadelphia County Medical Society, Oct. 18, 1911.

ways strong presumptive evidence of the presence of gonorrhea and materially assists in deciding on the nature of the endometrial discharge. The presence of circumscribed areas of inflammation in the posterior vaginal wall and erosions on the cervix, while helpful, are not of sufficient importance upon which to make a diagnosis.

It is therefore often impossible to recognize with any degree of certainty that the uterus has been invaded, and we can only infer in the presence of a negative microscopic report that such is the case when the clinical history of the patient is suspicious and when there is a noticeable increase in the cervical and uterine secretions. In puerperal sepsis, on the other hand, due to the streptococcus or staphylococcus there is a true wound infection with a clear well-defined history and acute symptoms. Unlike the insidious onset of a gonorrheal infection the symptoms are frank and the diagnosis readily made.

Considerable time, as a rule, elapses after the endometrium is infected before the gonococcus invades the tubes and the peritoneum, and as the infection is very subacute in character there is but little constitutional disturbance. In some cases there may be a slight elevation of temperature at the menstrual period, and recurring pains may be felt in one or both iliac regions. The menstrual flow may become slightly increased in amount and some dysmenorrhea develop. In other cases, on the other hand, extensive involvement may gradually take place without the patient being aware of her condition and the necessity for treatment.

In the early stages of a gonorrheal salpingitis as a rule the caliber of the tube is not increased, and it is therefore impossible to diagnose the condition. Later on, however, after the end of the tube has been sealed an enlargement is present which can be readily felt on examination and its outlines determined. Until the appearance of a gross lesion therefore the extension of the disease to the tubes can only be inferred from the first that tenderness is felt in most

cases by vagino-abdominal touch in the tubo-ovarian regions. In from 40 to 50 per cent of cases of gonorrheal endometritis the tubes eventually become affected, and we may consequently safely conclude that this has occurred when tenderness develops in one or both appendages.

A brief reference to the pathology of gonorrheal inflammation of the pelvis and the biology of the special organism which carries the infection is important before we take up the treatment of the disease, because it is impossible to clearly appreciate the principles upon which the management of these cases is based unless we have a clear conception of the way the gonococcus behaves and travels to adjacent organs.

The gonococcus causes a true surface infection of healthy mucous membrane, and as a rule it does not involve the deeper structures nor extend by metastasis. disease therefore travels along the mucous membrane of the endometrium and eventually causes grave inflammatory lesions of the tubes, the ovaries, and the peritoneum. The broad ligaments and pelvic connective tissue are not involved, except in very rare instances, and while it is true that the bacillus may occasionally enter the lymph or vascular channels, causing an arthritis or an endocarditis, yet this is exceptional and of no moment from the standpoint of the subject under discussion.

The practical difference between the pathology of gonorrheal infection and septic inflammation of the pelvis following child-birth is well marked and is important, not only from the view-point of diagnosis but of treatment as well.

In the streptococcus and staphylococcus infections there is a primary lesion and the microörganism enters a wound of the genital tract. The infection is therefore at first a limited one and is localized at the seat of injury. If, however, the microörganisms are not quickly destroyed they and their toxins enter the lymph and blood channels, causing a general blood infection or intoxication and areas of infection at more or less distant points. Under these

circumstances the broad ligaments and the pelvic connective tissue are soon involved and enlargements are felt on examination in the pelvis. This is quite different from the history of a gonorrheal infection, which only travels along the mucous membrane and in its early stage causes no increase in the size of the tubes.

Suppurative salpingitis is a common sequela in puerperal sepsis, but the tubal inflammation is the extension of a peritonitis or a secondary infection through the pelvic connective tissue, and it is only when there is a mixed infection with the gonococcus as an active factor that the inflammation travels by continuity to the oviducts. Again, it is uncommon for the abdominal end of the tube to be sealed in a streptococcus or staphylococcus infection, but when the inflammation is caused by the gonococcus or colon bacillus an exudative peritonitis is usually present and the oviduct is closed. Another important fact to remember is that the gonococcus lives indefinitely in the mucous membrane, but when it is enclosed in a cavity, as in the case of a tubal or tubo-ovarian abscess, its own toxins cause early loss of virulence and finally death, so that eventually the contents become sterile.

In considering the treatment of gonorrheal infections of the pelvis I shall discuss the subject under two heads, namely: first, the disease limited to the cervical and uterine cavities, and second, the infection involving the tubes, ovaries, and peritoneum.

The Disease Limited to the Cervical and Uterine Cavities.—When the disease attacks the uterus either as a primary or secondary infection, and is limited to that organ, I look upon the inflammation as being localized and at once institute active measures to destroy the microörganisms. Many authorities take a contrary view and advise against any local measures of a radical nature, as they fear to break down existing barriers against extension and open up new avenues for spreading the disease.

The gonococcus, as we have seen, is a surface infection and invades only the

mucous membrane of the uterus. There is little or no tendency to metastasis or involvement of deeper structures, and in its journey to the tubes it can only travel along the mucous membrane of the endometrium. Therefore as the infection is limited to the endometrium the rational treatment would be to destroy the microörganisms before they can pass into the tubes and not to trust to theoretical measures of an ultra-conservative character to accomplish that object.

No natural barriers exist in the uterine cavity against invasion unless it be the internal os, and personally I do not believe for one moment that is an obstruction in any sense to the dissemination of organisms upward after the cervical canal is involved. Again, how is it possible for radical measures to open up new avenues for spreading the disease? A gonococcus infection as we know extends by continuity along the mucous membrane, and consequently if the lymph and blood-vessels are opened these channels are not the natural passageways for the infection to travel, and finally radical operative measures overcome this objection, if it really exists, as the technique of the operation quickly seals up all avenues to the general circulation.

The treatment I practice in cases of gonorrheal infection is dilatation and curettement of the cervical canal and uterine cavity and the direct application of pure carbolic acid. This operation, in my judgment, is essentially rational because it removes the microörganisms and infected mucous membrane, stamps out the disease, and saves the uterine adnexa and peritoneum from grave inflammatory lesions.

There are several points in the technique of the operation which are important to carry out in order to get the best results.

The dilatation should be sufficiently extensive to allow of very free manipulation with the curette, otherwise the movements of the instrument will be restricted and it will be impossible to thoroughly remove all the mucous membrane. Again, a sharp curette must always be used as we cannot

scrape away the mucous membrane with a dull instrument, and unless the removal of the endometrium is complete the operation will be a failure, as the microörganisms remaining in the tissues will continue the specific process.

After the uterus has been curetted the cavity is wiped dry and clean with gauze and a temporary packing of gauze is then inserted. A small piece of gauze is now held by forceps and dipped into pure carbolic acid. The temporary packing is then removed and the uterine cavity swabbed out with the acid. The uterus is again wiped out with gauze to remove any excess of acid remaining in the cavity; alcohol is not used to neutralize the acid. It is important to have the uterine cavity dry when the acid is applied, otherwise it will be diluted with blood and its efficiency im-The application of carbolic acid thoroughly sterilizes the uterine cavity and seals up the blood and lymph channels.

The Infection Involving the Tubes, Ovaries, and Peritoneum.—The modern conservative treatment of pelvic infection involving the uterine appendages and the pelvic structures is a marked advance in the surgery of the female pelvis. The former practice of early operative interference in these cases not only was attended by a high mortality, but was also responsible for the unnecessary sacrifice of the organs of procreation.

The treatment of a gonococcus infection after it has advanced beyond the uterus and involves its adnexa and the peritoneum is based upon the following facts:

- 1. That many patients recover their health and the pelvic organs are spontaneously restored to a normal condition without the aid of operative measures.
- 2. That an operation during the acute stages of a gonorrheal infection is attended by a high mortality and the sacrifice of organs that might otherwise be saved.

First. Many women recover their health and the pelvic organs assume their proper function without an operation. A number of women who have had a gonorrheal infection of the uterine adnexa have recovered spontaneously and borne children. All of us have met patients who have been pronounced permanently sterile and who have subsequently conceived. The question of recovery depends upon the amount of damage done to the tubal mucosa and ovaries and to the extent and character of the parietal and visceral adhesions. The lesions are local; there is, as a rule, no tendency for the infection to enter the general circulation, and the uncured cases have as their chief results pain and sterility.

It is impossible to separate the patients that will recover spontaneously from those who must eventually submit to operative interference in order to be restored to health. We cannot tell by an examination the character and extent of the damage don'e to the adnexa unless there exists a tubal or tubo-ovarian abscess or some other form of gross lesion that may be readily palpated, and yet even in the presence of such apparent conditions recovery has occurred. This is especially true in those forms of infection which cause but little injury to the tubal mucosa, and very large pelvic exudates have been known to disappear in time without the aid of surgery.

Second. Operations during the acute stages of an infection have a high mortality and the pelvic organs are often unnecessarily sacrificed. The increased dangers attendant upon operative interference during the acute stages of a pelvic infection are readily understood by those who have had a large experience in these cases, and the explanation for this is not difficult to find.

In acute diseases of bacterial origin the patient's reserve forces are weakened; there is always more or less tendency toward insufficient action of the heart and kidneys; the anesthetic is badly borne; and the manipulations incident to the operative technique are likely to desseminate the infection. Again, it is a well-known clinical fact that in the early stages of these infections the microörganisms are actively virulent in character, and that later the bacteria lose their virulence or die, especially if they are

enclosed in a sealed cavity. The contents of these abscess sacs in a large proportion of cases thus eventually become sterile, and if during a late operation the peritoneum is soiled with the pus no harm results.

The exudative peritonitis, which is characteristic of gonorrheal infection, is constantly endeavoring to localize the disease and seal up the bacteria. If, therefore, this process of nature is interfered with by an early operation the localized areas of infection containing virulent bacteria are torn apart and the microörganisms scattered over the adjacent parts.

Operations during the acute stages of a pelvic infection must result in the sacrifice of organs that could be saved by conservative methods after the active inflammation has subsided. The early exudates binding and fixing the uterine adnexa, the parietal and visceral adhesions, and the sealing up of the abdominal end of the tubes present a picture during the acute stages which is found to be so different at a later period when sterilization and absorption has been accomplished by nature. In the former case it is impossible to know what organs to save, and as a matter of fact the removal of the tissues must be very extensive or actively virulent bacteria will be left behind. In late operations, however, sterilization and absorption have taken place, and the operator in an aseptic field is able to conserve the organs of procreation for future maternity and prevent the neurosis which so often follows female sterilization.

The final question now for us to consider is: What class of cases should eventually be operated on, and what is the safest time after an acute infection for operative measures to be undertaken?

As we have already seen, the chief terminal results of a gonorrheal infection are sterility and pain. Therefore the question of operation depends largely upon the patient herself, as the original focus of infection is sterile and there is consequently no danger to life.

In many instances the patient is entirely cured; she suffers no pain; and she may eventually conceive.

In another group there is more or less constant pelvic tenderness and sterility. In these cases the degree of pain usually decides the question. Women who are obliged to work for a livelihood must have relief, and an operation is more clearly indicated than when the patient can afford to rest and employ palliative measures.

In a third group of cases the lesions are so pronounced and the pain and distress so severe that operative relief becomes imperative. These are the infections which leave permanent gross lesions, and in which we find present tubal and tubo-ovarian abscesses associated with extensive visceral adhesions.

The question of operating for sterility alone must be answered by the patient. The results have often been most successful, and pregnancies have frequently followed conservative operations on the tubes and ovaries after long periods of sterility.

There is no time limit of safety that we can fix for operating after an acute gonorrheal infection of the pelvis for the reason that cases differ widely, not only as to the intensity of the primary inflammation but also as to the course they run.

Sterilization of the areas of infection usually takes place in from four to six months after the acute attack is over, and this fact should be borne in mind in selecting the time for operation.

The reserve strength of the patient, her general condition, and the state of the blood are all important factors and must be considered. We should not operate, therefore, in the presence of a leucocytosis nor if there is any elevation of the temperature. Pain, however, is not always a contraindication, as it does not necessarily point to an acute inflammation, for we frequently meet grave subacute types of the disease in which there is severe suffering and pelvic tenderness that nothing will relieve but operative interference.

Before closing my remarks upon this subject I wish to mention briefly the treatment of certain conditions which may develop during an attack of acute pelvic infection and which demands immediate

operation; I refer to general purulent peritonitis and to pelvic abscess.

If a general purulent peritonitis develops the indications are at once to make a rapid incision through the abdominal wall, insert a drain into the pelvis, place the patient in Fowler's position, and give enteroclysis by the Murphy method. Should a pelvic abscess form it must be opened through the vagina and drained.

## THE TREATMENT OF GONORRHEAL COMPLICATIONS WITH GONORRHEAL VACCINE COMBINED.

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Unfortunately chemotherapy does not offer for gonorrhea any specific. Urethral gonorrhea is most commonly a mixed infection of the gonococcus and staphylococcus, especially in the chronic stages, when the prostate and seminal vesicles are involved.

It is a well-known fact that the gono-coccus will lie dormant for years and apparently not produce any ulterior effects or damage, but the urethral catarrh will be continued because of the fact that there is a secondary infection. In pulmonary tuberculosis the high temperature and all the symptoms of systemic absorption of some septic matter are largely due to the complicating secondary infection. Pus cavities in the lung are not as a rule filled with tubercle bacilli alone, but by myriads of pus organisms.

In looking over my history book, among 1000 cases of gonorrhea, consisting of both acute and chronic cases in private practice, I find by far the larger per cent to be cases of mixed infection.

With this thought paramount in mind, in 1908 I communicated with the Department of Experimental Medicine of Parke, Davis & Co., and asked them to prepare for my practice one cubic centimeter ampoules of the mixed gonococcus and staphylococcus vaccine. They have kindly furnished me with the combined vaccine since that date, and I am now prepared to offer my experience and observations resulting from the use of it.

I have found in 100 cases, which I have treated in this way and recorded, that pri-

marily the reaction following the combined vaccine at times is a little more severe than that from the plain gonococcus vaccine. However, in most cases there was little or no rise of temperature on the evening of the day of injection. Around the site of puncture where the injection was made, I find as a rule for three days a distinct zone of erythema circular in form, varying in extent, and as a rule sensitive, more so for the first twenty-four hours after such injection. Generally on the fourth day it has faded. My favorite site of injection is on either side of the anterior abdominal wall in an area free from superficial veins. I have also given these injections in the arms and thighs, but prefer the anterior abdominal wall.

Several cases complained of some lassitude for two days, and on the night of the day of injection some had severe frontal headache and fever. Nausea and vomiting have never occurred.

I do not believe that we have in the combined vaccine a specific for urethral gonorrhea, but I do firmly believe that we have in it a valuable addition to our medical armamentarium in the treatment of many of our obstinate cases of gonorrhea, especially where the adnexa are involved and the duration of the disease is so long as to be classed as chronic.

I do not believe in eliminating all other treatment, nor have I used the vaccine without resorting to other methods of treatment.

One important point must be emphasized, viz., that several urologists agree that a

stock vaccine of the gonococcus composed of several different strains gives equally as good results as an autogenous vaccine. There is some question as to whether large doses at long intervals are not more effective than small doses at repeatedly short intervals. I am inclined to use the large doses, especially when the patient is plethoric and well nourished and the primary dose of vaccine does not cause too severe a reaction, as observed in the temperature, skin reaction at the site of puncture, and feeling of malaise and lassitude. In other infectious diseases there is no doubt that an autogenous vaccine is more effective than a stock vaccine. The average urologist and general practitioner has not readily at his command the armamentarium for estimating the opsonic index of patients while giving a vaccine treatment, and necessarily depends on the clinical symptoms of a patient as a guide for future and continued vaccine medication. If a steady opsonic index just above normal could be maintained more rapid recovery would occur than is commonly the case.

Acute gonorrheal urethritis, as a rule, is not of such great moment to both patient and physician as are the cases of chronic infection, in which patients become apprehensive and only too commonly develop sexual hypochondriasis. There is no doubt that in those chronic cases in which there are other organisms complicating the infection, such as the colon bacillus and the staphylococcus or streptococcus, treatment with an uncombined gonococcus vaccine seldom, if ever, accomplishes much permanent benefit. It is in these cases that I have used the combined vaccines, in patients referred to me by other physicians, who previously used the uncombined gonococcus, and by simply changing the variety of vaccine, depending on the kind of complicating infection, in very few cases have I failed to get favorable response.

No one can successfully treat chronic infections of the urinary tract without first closely studying the urine, especially if it be purulent in any degree. It is of vital im-

portance to make cultures of the urine, and not depend on the staining of the shreds, or on staining a drop of mucopurulent secretion which may present itself at the meatus.

When such cultures are made we know exactly what the complicating microörganisms are, and then we are in a position to give a combined vaccine. Very commonly have I found a triple infection of the gonococcus, staphylococcus, and colon In a perirenal abscess recently operated on, in which a pint of pus was taken from the renal region, such a triple infection was found. This patient was seen by me five years previous to the operation, when he had a chronic urethritis and prostatitis, and cultures of his urine at that time showed the mixed gonococcus and staphylococcus. He remained only a short time under treatment, and being before the days of vaccine he was merely given the routine treatment for the prostate and deep urethra which was in vogue at that time.

Gonorrheal Septicemia.—When gonococci or their toxins enter the circulation we have a true condition of septicemia, or systemic gonorrhea. Systemic gonorrhea is commonly worse for an individual than a syphilitic infection, often leaving a permanent heart lesion, sometimes fatal. Whenever gonorrheal arthritis occurs there must necessarily be a systemic infection by the gonococcus, because the gonococci are transmitted from the primary seat of disease, the urethra, to the secondary point of invasion by means of the lymphatic or circulatory systems.

All cases of systemic gonorrhea are serious and should not be dismissed with a favorable prognosis until a patient is well advanced toward recovery. One can never say just what the ultimate outcome will be, when a single joint surface or synovial membrane is first attacked. I reported a case seven years ago in a boy of seventeen years, who had gonorrheal ophthalmia of both eyes, malignant endocarditis, and all the joints of his body involved except a few of the metacarpophalangeal joints. This

patient ran a temperature of 106° F. and was unconscious for several days, but ultimately made a good recovery. In this case his knee-joints were aspirated, and several ounces of fluid removed. Culture of this fluid showed the gonococcus in pure culture, and cultures of his blood showed the gonococcus in the blood stream.

I desire to report a rare case. Inspection of the Surgeon-General's library in Washington, D. C., shows that only four cases of a like complication of gonorrhea have been reported to date.

Bilateral Gonorrheal Femoral Phlebitis. -Mr. X., aged twenty-four, first noticed a urethral discharge on February 20, 1909, several days following coitus. He used an injection given him at a drug store, and consulted me the first time on February 28. He developed an acute posterior gonorrhea. This was his first experience with a venereal disease. He made a very rapid recovery, and the urine cleared up remarkably rapidly. On March 14 there was no apparent urethral discharge, and the two-glass urine test showed both urines to be equally Treatment was discontinued. April 25 he felt a burning in the urethra and consulted me next day, complaining of pain in both inguinal regions. The urethral discharge was very profuse and gonococci abundant. This attack, which was in the nature of a relapse, was far worse than the original infection, and the urethral and bladder pain was so severe that the patient was ordered to bed and kept on a fluid diet. Two days afterward he had urethral hemorrhage on micturition, and I realized that he had a very malignant gonorrheal infection. He had a temperature of 102° the second day, and I diagnosed systemic gonorrhea from the clinical picture that presented it-He kept quietly at home, and was treated locally with silver salts, urinary antiseptics, sedatives, etc. In the meantime he developed a cellulitis and lymphangitis of the whole length of the penis extending up to the suprapubic region, and marked tenderness of both sides of inguinal lymph nodes, but no evidence of suppuration in them. One week afterward his right femoral vein was thickened and was distinctly palpable; it could be seen through the thin skin of his thigh, and looked as if a lead-pencil were inserted under the skin. The whole anterior surface of the thigh was sensitive. A week after this complication the femoral vein of the other limb presented the same condition; both legs from hips down to the ankles were swollen and painful; the saphenous veins of both limbs were markedly swollen. His temperature in the evenings now ran from 103° to 105° F. for several days. He had been getting the mixed vaccine for one week. Cultures of his blood did not show the gonococcus to be present. He reacted badly to the first dose of vaccine, and this was not repeated for five days, when the second did not produce the marked reaction of the first dose. The patient made a good recovery. At no time did I find endocarditis. Although pulse was rapid and feeble when the temperature was high, no abnormal murmurs of any kind were apparent. I concluded that he had a bilateral gonorrheal phlebitis, not due to infection through the circulatory system, but conveyed to the veins from the lymphatics leading to the inguinal glands.

For one month afterward the patient was unable to walk, and then only with the aid of crutches. There were no symptoms to indicate acute nephritis, and the urethral discharge progressively diminished. The bladder likewise responded to the vaccine treatment, and the patient made a slow but gradual recovery.

The patient was cautioned to be very quiet for some weeks, as there was a possible danger of a thrombus being dislodged from the femoral veins and producing thrombosis or embolism somewhere else in his circulatory apparatus. He was an intelligent fellow and heeded my advice. For one year he has worn elastic stockings on both limbs from the hips to the ankles, and to date is in good physical condition. I believe that without the vaccine treatment my patient would have died, as his toxemia was so severe and the infection so very malignant.

In acute systemic gonorrhea I firmly be-

lieve that all cases should receive the combined vaccine treatment, but in simple acute urethral gonorrhea either the plain gonococcus or combined vaccine in many cases is harmful instead of beneficial, because the circulation is already overloaded with toxic products and vaccine treatment may act to the detriment of the patient.

All cases of prostatic gonorrhea, and gonorrheal arthritis, as well as epididymitis and orchitis, should receive the benefit of the combined vaccine. In February, 1911, the following case of interest was successfully treated with vaccine, and is a type of similar cases treated by me:

Mrs. Z., aged thirty, married. Three days after coitus her husband brought her to me for examination. He had been treated one week previously by me for urethral gonorrhea, contracted extramaritally. Examination of his wife showed a thick urethral and vaginal purulent discharge with gonococci, abundant in her urethra. One day afterward both her kneejoints were tender; the left joint especially was so painful and swollen that she could not stand on the limb. I sent her to the hospital immediately. She showed signs of systemic gonorrhea within twenty-four hours after I had first seen her. There was a loud systolic murmur at the apex of the heart, the pulse was rapid, temperature 102° F., face flushed and anxious looking, and the patient in great distress. The limb was immobilized on a splint, and local applications made as placebos. Cultures of the blood showed the gonococcus present in the circulation. The temperature in the first week went to 104°. The patient was very sick, and on account of her endocarditis a probable fatal prognosis was given. She was placed from the beginning of her arthritis on mixed vaccine, given at intervals of three days. She received twelve injections, and at the end of that time her temperature dropped to normal and all signs of her systemic infection disappeared, except her cachexia, which followed her high temperature. The left knee-joint was swollen for three weeks, but as the fluctuation in it progressively diminished the joint was not aspirated. She was kept in the hospital for four weeks, and was then taken charge of by an orthopedic surgeon, who kept her in a plaster cast for several weeks. Outside of some ankylosis of her knee-joint she made an uneventful recovery.

Here again is a case of systemic malignant infection responding to vaccine combined.

Mr. U., aged thirty-five, had a chronic urethritis for several years. Several days after intercourse he developed an acute exacerbation. A profuse urethral discharge containing numerous gonococci was present. Whether he received a fresh infection of some new strains of gonococci or some latent infection was aroused was impossible for me to determine. This acute attack rapidly extended to his prostate gland. He had had in the past several attacks, and suffered such severe pains, radiating from the inguinal regions down to the testes, that he could not sit at his desk, but had to lie down. I tried rectal suppositories of sedatives; he reacted badly to opiates, and dry heat with rectal siphon was without effect. His urethra was treated with mild antiseptic solutions, as he did not tolerate too active urethral interference.

He was placed on the mixed vaccine, and while the first few injections relieved they did not cure him, and his severe pain did not disappear until the dose was run up to one billion gonococci every third day. I ran the dose up to this amount after using several injections of 500,000,000. The exceptional feature about his condition was that he did not develop any temperature after this enormous dose, and said he experienced a good effect after several hours. There was always, however, a skin reaction present. Gonococci persisted in his urethral secretion, which was latterly only a mucoid opalescent drop at the meatus, for three months. The vaccine together with dilatation of the urethra, to produce resorption of some granulating patches seen in the canal, completely relieved his pains and apparently caused disappearance of the gonococci. This enormous dose would be very dangerous to most patients, and I would counsel extreme caution in attempting to use this amount. It should be given only after gradually increasing the dose after the 500,000,000 dose is reached.

These few remarks will suffice to briefly give in a condensed form my experience with the combined vaccine in my private practice. I have gotten such favorable results from its use in properly selected conditions, and with the exercise of proper judgment, that I would be at a loss if I did not include it in my therapeutic armamentarium in the treatment of genito-urinary diseases.

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## TREATMENT OF NEVUS VASCULARIS BY THE USE OF CARBON DIOXIDE SNOW.

FRIEDLANDER reports his results in the California State Journal of Medicine for October, 1911. He says the best results are obtained where the blood-vessels lie in the skin, but with deep cavernous angiomata, where destruction is impossible, undesirable, or dangerous, a very satisfactory covering of connective tissue is produced, which is smooth and has a texture hardly distinguishable from normal skin. A case of a large hypertrophic nevus of the scalp of bright-red color and raspberry-like surface, treated by the author with carbon dioxide snow, now presents a slightly elevated, smooth, white surface, bearing a fairly profuse growth of hair where apparently none existed prior to treatment. This, of course, is not a curative procedure, but as a cosmetic process by which the more obvious and distressing lesions may be concealed, it certainly must be recognized as a distinct addition to our therapeutic armamentarium.

Occasionally the application is followed by a neuralgia, especially when the treated area is over the site of emergence of a nerve, but this is only transient, passes away in two or three hours, and is easily controlled with hot applications; it is also possible that an incompetent or incautious

operator will produce, by overtreatment, a hard white ivory-like scar, or a depressed one, but these are errors of technique. Janeway reports lupus erythematosus as a result of treatment with the snow, in which an epithelioma developed, but as his had been previously treated with the x-ray, it is far more probable that the lesion was due to the first treatment. Heidensfeld also reports a case, in a four-year-old child, in which some time following the treatment of a large angioma of the forearm the lesion became the seat of an acute inflammatory process with multiple, actively purulent. foul-smelling and somewhat gangrenous ulcerations, which resisted all forms of local treatment, and with no attributable cause. This is the only really bad result reported in many hundreds of cases, and was, in all probability, not due to the snow.

As a rule, the less treatment applied to the lesion the better the result; a simple ointment of equal parts of ung. zinci oxidi and vaselin will suffice to protect the parts and alleviate any sense of discomfort; outside of this it is not necessary to carry out any treatment except in those cases in which a slight oozing occurs on separation of the crust, which not infrequently happens in large hypertrophic nevi. This is, however, of no moment, and is readily controlled, without the aid of a physician, by the pressure of pledgets of cotton soaked in peroxide of hydrogen.

We have, then, in carbon dioxide snow a simple, effectual, comparatively painless. bloodless, and certain agent which is far preferable to any other remedy in point of rapidity, ease of execution from the standpoint of the operator, and tolerance on the part of the patient; and, since the great majority of these patients are children, painlessness and rapidity are of prime importance. Furthermore, the cosmetic result cannot be excelled and seldom equaled by any other agent, and in that class of cases in which a radical cure is not obtained, it is a safe and efficient method for relieving the disagreeable disfigurement which causes the patient so much discomfort and annoyance.

#### EDITORIAL.

### PHYSIOLOGICAL AND THERAPEUTIC ACTION OF ERGOT.

Of all the drugs which are employed for the purpose of producing immediate effects in the presence of grave emergencies, there are few upon which so much confidence is placed as ergot, and there are few which produce results so variable, the chief reason for the variation depending upon the fact that crude ergot itself and the various preparations of ergot vary greatly in power. A large amount of research has been carried out in an endeavor to isolate the active principles of ergot with the hope that some means of standardizing it by chemical processes might be evolved, but the result of this investigation, from the chemical standpoint, has been to indicate that the full power of ergot depends not upon one active ingredient but upon the combined action of several ingredients which, working together, produce better results than even the most active of them alone. Only physiological standardization is possible.

While it has been taught for many years that ergot stimulates contractions by acting directly upon the uterine muscle, it will be remembered that Hemmeter and others have apparently shown that it also affects the cells in the spinal cord which govern this organ, and Dale believes that its chief effect is exercised upon the myoneural junction—in other words, on the nerve-endings in the muscle.

There has recently appeared in the Proceedings of the Royal Society of Medicine for May, 1911, an interesting paper upon "Ergot" by Dr. J. Gordon Sharp. There are many points of interest in his communication. Some of these points serve to emphasize facts already recognized by American practitioners. Others are at variance with American views, and some of his results throw light upon subjects little understood. He found that the fluid extract of ergot seemed to be the best preparation for clinical employment, and that it was active after being kept for thirteen months,

and, furthermore, that the fluid extract is more reliable than any of the so-called solid extractives or active principles. He found that ergotoxine acted more rapidly than the fluid extract, and that it could be given hypodermically, but that ergotinine was inert and useless.

The doses which he suggests of the fluid extract of ergot are, however, less than those which are commonly employed in this country. He considers 30 minims an average dose, and 45 minims too large a dose, believing that full doses diminish rather than increase uterine contractility. Indeed, when it comes to the treatment of abortions and ordinary uterine bleeding, he thinks that a drachm of the liquid extract given in twenty-four hours is quite sufficient.

We believe that it is the custom of a very large number of American practitioners to administer ergot as soon as it is evident that the birth is accomplished, or so nearly accomplished that the child will be expelled before the effects of the ergot can be exercised. On the other hand, there are some obstetricians who think that it should not be used as a routine measure, and with this class Sharp agrees, believing that only a small number of women in labor need ergot. the majority being best without it. We are glad to find that he emphasizes points generally believed in this country to be important, namely, that ergot should not be given unless the os is fully dilated, unless there is no obstruction, bony or otherwise, and finally, unless the soft parts of the birth canal and outlet are soft and yielding. He believes that ergot is oftener required in multiparous women than in primipara. is interesting to note, however, that while in the early part of his paper he says that nothing but harm can come of sending the fetal head against the unyielding soft parts of the vagina by the early use of ergot, yet in a later part of his paper he states that it will occasionally happen that ergot will be given when the parts are not ready to effect the birth, but that this error is not productive of anything more serious than disappointment—a view which seems to contradict his first statement.

Sharp believes that ergot not only collects the small non-effective pains into larger effective contractions by improving the tone of the uterine muscle-fibers, but that it also tones up the abdominal muscles and the muscular system generally, which is a somewhat novel view.

Careful observations carried out in a number of cases by Sharp lead him to believe that if half a drachm of the fluid extract is given in a small cup of hot tea, it acts far more rapidly than physicians commonly think—sometimes as soon as four minutes, and rarely as late as twenty minutes—the average being ten minutes. We cannot help feeling that this observation will have to be confirmed by others before it can be accepted, as few drugs are absorbed from the stomach with such extraordinary rapidity.

Sharp does not think that either morphine or opium in any way inhibits or interferes with the action of ergot. An ordinary dose of laudanum may diminish the patient's voluntary efforts, but does not decrease the activity of the uterus under ergot, according to this observer, nor does he think that the administration of chloroform, in the quantities suitable in parturition, impairs the action of ergot on the uterus.

He is also in opposition to those who believe that full doses of ergot produce tetanic contractions of the uterus. Indeed, he believes, as we have already stated, that very large doses tend to diminish uterine contractility rather than to increase it, and toward the close of his paper insists positively upon 30 minims being the proper dose. Sharp does not believe that ergot in any dose will induce abortion—a view which we think is generally held, and he thinks that next to its employment to stop postpartum hemorrhage, its most useful action is for the removal of the separated but retained fetus or membranes in abortion. With this view we believe a large number of physicians will radically differ.

Carrying out a study of the influence of ergot given by the mouth on blood-pressure, and using the sphygmomanometer of Riva-Rocci, he was unable to find that it exercised any material influence, and believes for this and other reasons that there is no objection, but rather great advantage, in the use of ergot in the treatment of hemoptysis. Here, again, we fear that we cannot agree with him.

## MASSAGE OF THE HEART IN CHLOROFORM SYNCOPE.

This method of treating sudden cardiac failure during the administration of chloroform has now been before the profession for a good many years, but probably has not received the attention that it deserves in those portions of the United States where chloroform is commonly employed. Opportunities for resorting to massage of the heart do not frequently arise, and even in those districts where chloroform is frequently given, its skilful administration is so rarely followed by untoward cardiac effects that many surgeons may see thousands of cases without being called upon to combat this grave complication. On the other hand, when this condition arises the state of the patient, and indeed that of the surgeon, is desperate, and for this reason the possibilities possessed by cardiac massage are not to be lost sight of.

Recently an interesting contribution to this subject has been made by Wiart in La Presse Médicale of October 18, 1911. He calls attention not only to his own experience but to that of a number of other operators, ignoring the experience of the German surgeons who first introduced this method. He quotes the contribution of Mocquot, who in 1909 called the attention of French surgeons to this plan. In his statistics at that time there were 14 cases of cardiac massage practiced through the thoracic wall with one success, two partial successes, and 11 failures. In nine cases where the massage was carried out by passing the hand through the diaphragm, there were nine deaths; whereas in 18 cases in which

massage was practiced through the diaphragm there were eight successes, five partial successes, and five failures. These statistics confirm those of Lenormont made in 1906 to the effect that the subdiaphragmatic method gives the best results. In Wiart's experience there were 15 cases with six successes and nine failures by this method.

Some of the cases which have been reported by other operators possess points of interest. Thus, in a patient under the care of Mr. Miles, a Scotch surgeon, the heart stopped during the operation of gastroenterostomy, the pupils dilated, and the respirations ceased. The wound was immediately opened, and massage through the diaphragm practiced. The heart recommenced beating, and the patient made a perfect recovery. In another case reported by Mr. Rutherford, the patient was operated upon for hemorrhoids. The heart ceased beating, and for half a minute artificial respiration was practiced. failing to restore the patient, the surgeon made a middle-line incision above the umbilicus, introduced his hand, and performed cardiac massage through the diaphragm. The heart began to beat in about one minute and a half, and the patient recovered. So, too, Milnes, while operating upon a patient suffering from appendicitis, found the patient in collapse. He enlarged the incision toward the sternum, introduced the hand and performed cardiac massage through the diaphragm, using the other hand over the precordium. Here, too, resuscitation was satisfactorily accomplished, the operation was continued, and the patient got well. And in still another case Jurasz did pylorectomy for cancer; the patient went into syncope, and the surgeon gave up all hope of resuscitating the patient after five minutes of artificial respiration. He resorted to massage through the diaphragm, and after three or four minutes succeeded in reëstablishing cardiac action. Twenty days afterward the patient left the hospital well. Another case is reported by White. During a laparotomy the patient passed into syncope. After employing ordinary methods

of resuscitation for two minutes without results, massage of the heart was practiced through the diaphragm and also through the thoracic walls with the other hand. In about a minute the cardiac contractions were renewed. Recovery took place, although the patient eventually died from tetanus. In all these instances it will be noted that the condition of the patient was most grave and apparently hopeless when this plan was resorted to.

All cases are, however, not so successful. Thus, in one case reported by Rehn, a child of seven years passed into syncope at the close of an operation. Artificial respiration was performed for five minutes without success. Rhythmic tractions of the tongue and other measures were resorted to without relief. The surgeon then made a median incision above the umbilicus, introduced his left hand through the diaphragm and exercised rhythmic pressure upon the heart, while an assistant maintained artificial respiration. Fifteen minutes after the attack of syncope came on the patient had a few irregular inspirations, and forty-five minutes afterward the heart was found to give a single contraction. Artificial respiration was then maintained by insufflation, and after twenty-five minutes cardiac contractions commenced regularly. After thirty minutes the contractions became irregular, but stopped as soon as the cardiac massage ceased. The patient, however, survived for Then the respiration and a few hours. heart became more feeble, insufflation of the lungs was again practiced, and massage of the heart renewed. The patient nevertheless died four hours afterward. So, too, in another case reported by White, where this method was resorted to after five minutes of artificial respiration, a child of twelve years who had had an incision made for a popliteal abscess was at once subjected to a laparotomy and cardiac massage, the left hand on the heart, the right hand on the precordium. After about a minute the heart beat very feebly, but regular contractions were established in seven minutes. pulse was 120. Two hours after this the patient suffered from a series of tonic convulsions, the pulse was quickened, the temperature rose, and death occurred in coma. Somewhat similar cases have been reported by Sourdat, Phélip, and Lévy.

These results indicate that although abdominal incisions and cardiac massage seem like heroic measures they are nevertheless justified in view of the condition of the patient, and that efforts at resuscitation should be maintained over a long period of time. One of the disadvantages of attempting cardiac massage through the thoracic wall or by making an incision through the diaphragm, is that the opening of the thoracic cavity interferes with respiration and makes artificial respiration practically The influence of the incision impossible. through the abdominal wall and of the entrance to the abdominal cavity of the operator's hand in the production of shock is not to be ignored; but at the same time when death seems certain, any measure which promises relief should be resorted to.

#### ALCOHOLISM AS A DISEASE.

The question as to whether alcoholism is a form of mental disease has, of course, been actively discussed by many medical men and laymen over a long period of years, and eminent authorities can be found who indorse either the positive or the negative side of this proposition. That it is a disease, in the ordinary conception of the term -that is, one associated with a definite pathological lesion—is, of course, untrue; but some think that it is a disease, not in the organic but in the functional sense, and go so far as to assert that the alcoholic can scarcely be condemned for his abuse of the drug in that he is not responsible, on very much the same principle that a man is not to be condemned when he vomits as the result of an actual gastric lesion. We cannot help feeling that this view is erroneous, and that alcoholism primarily is not in any sense a disease, although it may be a manifestation of weakness of character and instability of nervous balance-weakness of character in the sense that the patient turns to the benumbing effects of alcohol whenever the world, rightly or wrongly, seems

to present a leaden hue, or turns to it when, because of nervous instability, he seeks some benumbing agent which will prevent him from suffering the mental distress which comes from a lack of nervous balance. Ultimately, alcoholism may become a disease in that the condition of the patient's body may be such that it cannot functionate properly without its daily quantity of alcohol, but this condition of disease is the result rather than the cause of the alcoholism.

We think that this distinction is of importance for several reasons, not the least of which is that the average alcoholic is only too anxious to obtain an excuse for his excesses and weakness, conquering his sense of remorse by the comforting thought that he is not a responsible agent, and that conditions exist in his mind and body which are beyond his individual power to combat. Although it is quite true that many persons who are addicted to the excessive use of alcohol are exceedingly charming and delightful companions, and often, in their periods of sobriety, intellectual and entertaining, a careful study of their personal characteristics will nearly always reveal the fact that they lack certain essential qualities for the maintenance of a character which can be truly admired; they are often uncertain when decision is needful, cowardly when courage is essential; unstrung when self-control is the one characteristic required. These persons may be said to be alcoholics by chance, solely because the alcohol has been the benumbing agent which has been most ready at hand when some such drug is required. Had morphine, cocaine, chloral, and other substances been equally convenient, the patient would have resorted to them just as readily as to alcohol, and there is no reason for believing that the tendency to alcoholism is a disease any more than the tendency to morphinism or chloralism is a disease. The sooner a physician impresses these facts upon a patient who is addicted to one of these drugs the sooner he deprives him of the excuse he is using for his conduct, and the sooner will at least one step toward cure have been taken.

#### THE REAL ACTION OF CAFFEINE.

In the original columns of this issue of the THERAPEUTIC GAZETTE our readers will find two interesting contributions upon the physiological action of caffeine, one by Dr. Hollingworth. of Columbia University, New York, and one by Dr. H. C. Wood, Ir., of the Medico-Chirurgical College, Philadelphia. These articles throw a new light upon the actual effects of this sub-Heretofore it has been regarded as a stimulant which increased physical activity as well as mental activity by enabling the individual who took it to call upon his reserve energy with the ultimate result that he would be a nervous bankrupt. Dr. Hollingworth's investigation, which was carried out independently of that of Dr. Wood, indicates that if a man gets his ordinary amount of sleep and food he can, under the influence of caffeine, do more mental work and certainly do it more easily than when this drug is not taken. Dr. Wood's experiments also show that the frog's muscle can do more work under the influence of caffeine than without it. In other words, it would seem that this drug acts as a lubricant, so to speak, so that more work can be accomplished with no more expenditure of tissue or energy than is ordinarily the case. In other words, its use does not cause exhaustion of the nervous and muscular systems, but enables them to act with greater ease.

#### TRAUMATIC HEMOTHORAX.

In spite of the very considerable attention devoted to this subject and the large number of cases reported embodying the result of clinical experience, there is yet no unanimity of opinion concerning the principles which should govern the immediate treatment of hemothorax. The well-known tendency of these accumulations to suppurate constitutes a leading argument in favor of immediate intervention. That they do not always so do, and that immediate intervention is attended by a certain mortality, constitute at least some reason for

conservative treatment unless the symptoms of progressive bleeding or the mechanical interference with respiration or circulation urgently call for immediate relief.

The conservative treatment has for its end the thorough cleansing and tight closure of the wound without probing, fixation of the chest by straps or bandages, and absolute body quietude secured by rest in bed and morphine in sufficient doses. Lucas-Championnière maintains this condition of splinting sometimes for a period of six weeks. Should the signs of pressure increase as evidences of marked dyspnea and displacement of the heart, part or all of the blood may be evacuated, preferably by aspiration. This puncture, if required at all, is usually called for in the first two or three days. A similar aspiration is called for in five to six weeks if the pleural effusion is not absorbed.

As to the clinical results of this conservative treatment Le Normant (Journal de Chirurgie, September, 1911) quotes Garré's report of 700 cases of pulmonary traumatism with 40 per cent of deaths. As contrasted with this, Le Normant notes, of a large number of cases reported, a mortality of less than 20 per cent following conservative treatment. If those cases are eliminated in which there are complicating lesions of viscera other than of lungs, such as the heart, great vessels, the spine, and abdominal organs, of 1056 wounds of the lung there were but 105 deaths, a mortality of 10 per cent. It is also shown that this favorable result is often obtained in cases accompanied by a very abundant hemothorax with pronounced mechanical dyspnea. It must also be recognized that even though the majority of cases are saved under this treatment, 10 per cent die.

As to the causes of death, two-thirds perished from hemorrhage, one-third from infection. The probability of the latter complication is proportionate to the size of the hemorrhage.

Concerning the aggressive treatment by thoracotomy and direct hemostasis applied to the injured lung, the question most difficult to determine perhaps is as to whether this is or is not imperatively called for. Le Normant states quite justly that much more importance should be attached to the evolution of the symptoms than to their individual prominence on examination. When both the local and constitutional symptoms of hemorrhage become progressively more pronounced in spite of a well-conducted conservative treatment, operative intervention is surely called for. Thus, on repeated observation, if the hemothorax is increasing, the dyspnea more threatening, the pulse weaker and more irregular, the temperature falling, operation is indicated.

There is among surgeons at the present time a growing tendency to treat penetrating wounds of the chest in much the same way as penetrating lesions of the abdomen, viz., to make an exploratory thoracotomy, closing if there be little or no blood in this cavity or no sign of bleeding, and opening more widely if there be abundance of blood in the pleural cavity, and securing the point of bleeding if this be accessible. Many surgeons advise this as a routine procedure in the absence of either local or general symptoms of marked hemorrhage. Le Normant observes that if it can be proven that exploratory thoracotomy is under such circumstances in itself a safe procedure, nothing can be said against it. It appears, however, that such operations are attended by a very large mortality, namely, 33 per cent, and this large mortality persists, although in recent years cases have been multiplied. Thus, in 1895 Garré noted five deaths in nine cases; in 1907 Martel recorded 47 cases with 14 deaths; in 1910 Möller reported 64 cases with 21 deaths. Le Normant has collected 133 cases with 44 deaths. He believes that even this mortality is less than that which really exists. Moreover, examination of the recent cases by no means proves that all those who survived would not have done so had they been treated more conservatively. Baudet, who was a firm believer in systematic and immediate intervention, has published a series of 25 cases of stab wounds with nine deaths.

As to the causes of these fatalities, they

were practically all due to hemorrhage or infection. A greater number became infected than was the case in the series treated in a conservative way. Infection seemed to be rather the rule. Of 25 cases operated on by Stuckey, only six recovered without this incident.

Hence Le Normant concludes that direct intervention in case of wounded lung should be the exceptional and not the routine treatment, and should be reserved for cases in which it is absolutely indicated as an immediate life-saving means. Moreover, it can be readily shown that many of the bleeding wounds of the lung cannot possibly be reached by any form of thoracotomy, Garré having noted on the basis of 150 careful observations of patients dying of wounded lung that perhaps five or six per cent could have been helped by an immediate operation. Moreover, Tuffier states that the larger his experience the more firm his conviction that the indications for immediate operation are exceptional; that death occurs in these serious cases in the first few hours following the accident; that those who pass through this period usually In the cases of colossal hemorrecover. rhage there have been many deaths upon the table, and it is quite true that some of these dying cases have been undoubtedly saved by surgical intervention. Le Normant considers that surgery does not offer its best results in these overwhelming cases, but rather in those which are slowly but persistently progressing. Under such circumstances operation practiced some hours after the injury is entirely logical and lifesaving. Recurrence of the bleeding is also an absolute indication for operation.

As to the technique of thoracotomy, the opening must be large and must be made by cutting through the ribs and turning back big flaps, including the entire thickness of the chest walls and at least three or four ribs an inch from the sternal border to the axillary line. Or the intercostal space may be split through its whole length from the spine to the sternum and spread widely by retractors. The blood is then emptied from the chest and the lung seized

and drawn into the wound. Hemostasis is accomplished either by ligature or suture, preferably the latter. At times forcipressure and cauterization or pneumopexy—i.e., fixation of the wounded portion of the lung to the parietal pleura—are needful. Occasionally a tampon may be absolutely essential and the only means of stopping the bleeding. The mortality is higher than when other means are available.

In closing the wound there is some difference of opinion as to whether it should or should not be drained. If it be hermetically closed the pneumothorax can be at once relieved by aspiration.

Noetzel has experimentally shown that the pleura exhibits a considerable resistance to infection, but that this resistance is diminished by all departures from its physiological condition, such as pneumothorax with its effect upon the lymphatic and blood circulation. An injection of staphylococcus into a pleura previously subject to pneumothorax always caused pleurisy. chances of cure are much better if the pleura be completely closed by a suture than if it be drained. In the latter case the infection is more certain and more serious. Of 45 cases sutured and drained there were 19 cases of infection (40 per cent). Of 40 cases not drained there were six cases of infection (15 per cent). The cases in which drainage of the pleura is absolutely required are rare.

The aspiration of pleural air after complete closure of the wound establishes immediately a normal condition of respiration. It is held that this procedure sometimes encourages a recurrence of bleeding, and Le Normant himself concludes it is needless since the air is absorbed with great rapidity, at times within thirty-six hours.

# THE USE OF SILVER WIRE IN OPENING THE KIDNEY.

It will be remembered that some ten years ago Brödel published an admirable study of the vascularization of the kidney, pointing out the two main arterial trunks with their branchings and the comparatively avascular area through which an incision should be carried if splitting of the kidney were required for removal of calculus or for other purpose. Cullen and Derge (Surgery, Gynecology and Obstetrics, Oct. 19, 1911), basing a further study on Brödel's work and much that had preceded it, conceived the idea that the kidney might be opened with the least possible traumatism to its vascular supply by means of a wire. They argue that if it were necessary to pass a wire between two trees, the branches of which interlaced, it is obvious that this could be more readily accomplished, and with less damage to the trees, by drawing the wire from below upward than from above downward. In its upward passage the branches would slip aside and the twigs and leaves would be the only structures damaged, whereas in the downward movement of the wire, the less resistant branches would be broken or considerably bruised. Similarly, were a sharper instrument than the wire used the same comparative results would be obtained. While all the branches would be severed in its downward direction. a considerable number would undoubtedly escape were the instrument directed upward.

As a necessary deduction from this reasoning, it seemed obvious that in cutting the kidney the most satisfactory results would be obtained by a blunt instrument carried from within outward, thus pushing the vessels aside. An experimental investigation, utilizing No. 3 silver wire, showed that the amount of bleeding when the kidney was thus split averaged only one-half that from a knife incision of equal size; that this bleeding was readily controlled; that there was no postoperative hemorrhage; and that the resulting infarct was much smaller.

Before making the incision by any method the surface of the organ should be carefully examined in order to determine the proper location of the opening. The operator should assure himself that the anterior circulation predominates over the posterior, this being true only in four-fifths of the cases. Such kidneys show a rounded

front and pulsating artery in the anterior portion of the hilum. The posterior surface is flat and shows the deeply marked notch in which the posterior hilum and the pelvis lie. The plane of vascular division is in such kidneys in the posterior parenchyma, and the deeper the notch the further back it lies. If on palpation the anterior hilum is found notched and pulsating arteries are found in the posterior hilum, the avascular zone will be found in the anterior parenchyma. If no notch is felt on either side of the hilum, the incision should be exactly in the central plane of the kidney.

Attention is also called to the necessity of recognizing whether or not the pelvis be an intra- or extrarenal structure. In the former case a single incision is safe, in the latter dangerous, since there is always, then, a divided pelvis with a thick, highly vascularized parenchyma between the divisions. An intrarenal pelvis is recognized by the presence of a small, narrow hilum with recurring poles, while an extrarenal pelvis is associated with a long, wide hilum, with the renal poles far apart. Where the pelvis is divided as in the extrarenal cases, two separate incisions are indicated.

As to the technique of the operation of nephrotomy, Cullen and Derge, in consonance with the general surgical principles, advise exposure of the least possible amount of renal parenchyma compatible with the result to be obtained. If there be a small stone at the lower pole a radial incision is advocated, making this opening with a curved liver needle, on which is threaded No. 3 silver wire. The needle is introduced into the pelvis of the kidney, is passed through the pelvis into one of the calyces, and is brought out at a radial point on the convex border. The capsule is then split with a knife to avoid tearing, and by a gentle sawing motion the wire cuts its way through. In case more room is needed the pelvic incision should be enlarged. For the removal of several stones, or the removal of a stone at the upper pole, an L-shaped opening is advised. A radial opening is made as just described. From the outer

end of this incision the needle is carried into the pelvis and brought out at a corresponding point near the upper pole. After splitting the capsule with a knife the kidney is then sawed through. This enables the organ to be examined thoroughly without injury to arterial branches. For a large branching stone it is advised to cut down upon it with a knife, since the vessels are widely separated and the parenchyma thinned out. The authors strongly advise against making a radial wire incision at the upper pole, as incision at this point will pass through the large posterior branch of the renal artery.

In exploratory nephrotomy, such as may be called for in suspected "essential hematuria" or tuberculosis, examination of the kidney parenchyma is often advisable. Wide exposure of the pelvis is not essential. A small vertical slit in the posterior wall of the pelvis is made with the knife, and the silver wire with a straight liver needle threaded on either end is introduced. Each needle is then successively passed through the pelvis in an oblique direction. traversing the kidney substance emerges at the corresponding points on the surface. The wire is then pulled taut and is in position for use. The small opening in the pelvis can then be immediately closed with fine catgut. The nephrotomy is then completed in the usual manner. sures the needle always entering the pelvis, even though the latter be collapsed. Nor is there a chance of this wounding any of the large arterial branches. In making the incision with the wires firm counter-traction must be made. Moreover, injury of the renal poles is carefully avoided because of their extreme vascularity.

The nephrotomy wounds in the human have been closed with two rows of mattress sutures of twenty-day catgut, and the superficial margins approximated with a running or interrupted suture of fine, plain catgut, these sutures being placed by straight liver needles. The pressure employed in tying is just enough to insure good approximation. This readily controls the bleeding and there is very little pressure on the

blood-vessels, the greatest strain being limited to the capsule. No drain is ever used through the cortex into the pelvis of the kidney. Nineteen nephrotomies are reported with no severe postoperative hemorrhage in any of them, but the urine was bloody or blood-tinged for a number of days.

This contribution, as based on anatomical grounds, supported by experimental investigation and finally proved by clinical use, carries lessons of major importance to the operating surgeon. It is obvious that considerable force is often needful with the wire as used, since the surgeon is cautioned to employ counter-traction lest the renal vessels be torn. It also seems a fair inference that up to a certain point the finer the wire the less the trauma, although the immediate bleeding may be greater. This, however, is not difficult to control. The special virtue of the procedure lies in the fact that it enables the surgeon to assuredly

reach the pelvis of the kidney with its calvees, to expose it widely, to cleanse it thoroughly with a minimum amount of injury to the kidney structures and its vessels. The caution in regard to placing the mattress sutures is timely. These have been objected to on the ground that they cause an extensive destruction of renal parenchyma. This is proportionate to the firmness with which these sutures are tied. Since very little pressure is required to relieve the bleeding which occurs at the end of an exploration of the kidney, the sutures should be tied down with no more force than is necessary to check this bleeding. The effect of subsequent tightening incident to inflammatory reaction and swelling is difficult to guard against. Since the bleeding once checked is not prone to recur, it is probable that the use of absorbable sutures which partially disintegrate in the course of three or four days will prevent this complication.

# REPORTS ON THERAPEUTIC PROGRESS.

# ALCOHOLISM AS A COMPLICATING FACTOR OF ANESTHESIA.

In the Medical Record of Sept. 30, 1911. McMecham asserts that it happens frequently that during the conduct of narcosis in alcoholic subjects, despite expert administration, jactitation, spasticity, and clonic spasm develop from operative trauma, certain manipulations, or turgescent -cyanosis. Under such circumstances it has been the experience of Rowell and Kingsford that under chloroform or ether narcosis, the spraying of a few cubic centimeters of ethyl chloride upon the mask will almost immediately relax the muscles and quiet jactitation. A perfecting detail of this method is the concomitant use of oxygen to control any imperiling degree of -cyanosis which may arise during the conduct of narcosis. Oxygen not only renders anesthesia safer to the patient, but even when used in low percentages has a peculiar effect in maintaining the physiological balance of the gaseous constituents of the blood. It not only promotes the entrance of the ether vapor into the circulation, but also assists in its excretion by keeping the output of carbon dioxide to practically its physiological standard. The concomitant use of oxygen in this manner is not only more rational, but in the experience of expert anesthetists, more successful in obviating and combating anesthetic dangers than the concomitant use of carbon dioxide.

Postoperative recovery is exceptionally rapid in alcoholic patients, who are often able to talk and look about them within two or three minutes after withdrawal of the anesthetic. Postanesthetic vomiting is a rare after-effect, and aside from suppression of urine or the supervention of delirium tremens or pneumonia there are few complications. Now that it is possible to establish the gauge of kidney function, the urinary output test should be used preliminary to operation on alcoholics whose history

or preoperative condition makes them hazardous risks.

As Bellamy-Gardner has suggested, some alcoholic patients cannot be satisfactorily anesthetized by any known method, and in operating upon subjects of known alcoholic excesses a method of fixation to the table recently illustrated by Herb, and also in routine use at Bethesda Hospital, Cincinnati. Ohio, is remarkably effective. heavy canvas surcingle is circled about the patient and table, just above the knees, and drawn sufficiently taut not to be uncomfortable, but to prevent untoward movements during the excitement stage of nar-The wrists are either held firmly to the sides of the hips by leather wristlets, joined by a strap under the gluteal fold, or may be circled by strands of twisted gauze, tied with an inch leeway, so that no movement of the patient can impede circulation by tightening the loop. The gauze is passed under the thighs or is tied to the table so as to flex the forearm on the biceps. The wristlets must have automatic catches which can be instantly released, and the gauze must be tied in single bow knots, so that in case of emergency, when artificial respiration must be resorted to, the arms of the patient may be guickly Bimanual pressure over the released. lower ribs is very effective in reëstablishing respiration which has been arrested by spasmodic fixation of the chest.

The suggested restraint is not only harmless and convenient, but it also prevents any untoward movements on the part of patients at any stage of narcosis or operation, a precaution that is well worth taking in advance, when confirmed alcoholic subjects are concerned. Also the customary stirrups attached to operating tables lend themselves poorly to securing alcoholics in position for perineal or rectal The Clover-clutch, carefully operations. adjusted and safely anchored, the Bierkoff stirrups, or the shoulder-strap leg-holders, which flex the thighs on the abdomen, are decidedly preferable in use. Other stirrups, which secure the required position by straps about the ankles and insteps, give

the patients a powerful purchase for pushing themselves up the table. Preliminary hypodermic injections of morphine alone, or in combination with hyoscine, or atropine, are a serviceable routine in all alcoholics, not presenting symptomatic contraindications to the drugs mentioned.

Postoperatively, should there be suppression of urine, sparteine sulphate, if used in sufficient dosage, is a specific. Also, if there is likelihood of delirium tremens supervening, appropriate medical treatment should both anticipate and immediately follow the operation and be pushed to effect.

While attention to all these details will make the narcosis safe for the patient, as convenient and satisfactory as possible for the operator, still expert anesthetists will always feel, after grave experiences with alcoholism as a complicating factor of anesthesia, that it is deplorably prevalent and would gladly be dispensed with, could such an improbable event occur.

#### THE TREATMENT OF ANEMIC ENTER-OPTOTIC DYSPEPSIA.

PECKHAM in the Medical Record of September 30, 1911, in writing on this subject says that measures directed to the improvement of the patient's general condition may be considered under the heads of hygiene and of therapeutics. Under hygiene may be mentioned the sojourn at some spa, where the waters are of a mildly alkaline reaction, or in some place where an outof-door life, freedom from care, and a general change of scene may be enjoyed. The patient's tastes may be consulted upon this subject, but any fishing or shooting trips must be well considered with the amount of fatigue in view. Traveling in the wilds of Maine is apt to be rather heavy work for those patients, unless the pace is made sufficiently moderate. A course of treatment on the lines of the fresh-air cure is often of great service, especially if the patient is much reduced physically.

Regarding drugs there is very little to be said. General tonics may be used. Phosphorus or the pyrophosphate of iron, alone or combined with gentian, may be tried. Tonics very rich in alcohol should not be used. Ammonium carbonate is a valuable stimulant, if one is needed.

The gastric peristalsis may be very closely imitated by massage of the abdomen. This is best performed within two hours after eating. This manipulation consists in gently stroking the abdomen from side to side with the flat hand. Its proper performance requires some practice. The error is usually made on the side of too much force and too rapid stroking. This method must be used with caution, especially if there is any tendency to a spastic condition in the colon, when it will cause discomfort and pain. It may well be combined with general massage. In the atonic forms of constipation it is the treatment par excellence, as under its use the bowels become more active and nutrition is very much improved.

Measures directed to the relief of the intestinal symptoms have a very important place in the treatment of these cases. There is always a certain irritable condition of the pylorus present, resulting from the irritation of the intestinal mucosa. This is very apparent in those cases that show a marked increase in the degree of acidity of the gastric contents. This may even reach the point of spasm. Whenever nausea is present we may assume that there is an irritation of the intestinal mucosa, or that this irritation has even reached the point of a catarrh. Bismuth is probably the most useful drug that we possess for the relief of this condition. It should be given in large doses and upon an empty stomach. Besides coating the intestinal mucosa and protecting it from the hyperacid chyme, it also acts as a very efficient intestinal antiseptic. The bromides are also of service. reducing the secretion of hydrochloric acid and allaying many of the reflex nervous symptoms, which are so troublesome in these cases. Belladonna also may be used, always bearing in mind that many people are very susceptible to its action. Menthol and valerian may be tried. Among the alkalies may be mentioned sodium bicarbonate, calcium carbonate, and the alkaline mineral waters, omitting those that have any cathartic action. Small doses of chlorate of potassium may also be administered with improvement in many cases.

Cathartics should be avoided as much as possible. In patients past middle life their use may be necessary, but in most cases little permanent good can be accomplished while the patient is the victim of the cathartic habit.

The operation of gastrojejunostomy has no place in the treatment of anemic enteroptotic dyspepsia. Cases in which it is of benefit are few and far between, and in many cases the author has thought that it has done irreparable harm. In cases complicated with ulcers, however, it may be performed after medical treatment has failed.

These patients are deserving of more attention than is usually bestowed upon them. In no other class of cases are a thorough physical examination and careful and painstaking diagnosis more important. Serious errors in diagnosis are without excuse. For example, the diagnosis of anemic enteroptotic dyspepsia in the presence of gastrectasia is a fault that is apt to reflect upon our medical skill. The most common mistakes arise from confusing chronic catarrhal gastritis, dilatation of the stomach, and carcinoma with anemic dyspepsia—in other words, an organic with a functional disease.

These cases belong to that class known as the physically deficient. They are, as a general thing, poorly fitted to fight the battles of life. Nutrition with them becomes a positive burden. They are apt to be the subjects of tuberculous infections or of other low grades of inflammation. They show a marked tendency to develop psychopathies, neuropathies, drug habits, and alcoholism. They are active mentally and are very quick to detect any inconsistencies in the statements made to them in the course of their treatment. They are constantly in search of the royal road to recovery, and the amount of time that they will spend in efforts to save themselves mental and physical labor is remarkable. It is very difficult to get them to follow a régime with any degree of consistency. Their idea of life makes it, to them, one of constant compromise.

Many of the results of treatment may be called truly brilliant, but at times our best efforts will end in failure. We should regard these cases as mechanical problems, in which we must so handle an insufficient gastric conveyor that it may serve the requirements of the bodily nutrition.

# THE TREATMENT OF SYPHILIS BY SALVARSAN.

BROWNING and McKenzie, in the British Medical Journal of September 23, 1911, state that during the past fifteen months about 300 cases have been treated with salvarsan. These include almost all the early and late manifestations of syphilis. The number of cases treated, in which the only clinical evidence of infection was the primary sore, is 22. Two of these received one injection of 0.3 gramme as clear alkaline solution intramuscularly: four received 0.4 gramme as neutral suspension subcutaneously; the rest were treated by intravenous injection with doses varying from 0.3 to 0.6 gramme in dilute alkaline solution (0.1 gramme salvarsan in 50 Cc. normal saline solution). In none of the 22 cases has any symptom appeared since the treatment. The two cases treated intramuscularly have been quite well for almost a year, and the serum reaction was negative in both six months after the injection. In three of the four cases treated with neutral suspension the serum reaction was negative six months after injection. In the fourth case the reaction was still positive after six months. An intravenous injection of 0.5 gramme was given, and a month later the serum reaction was negative in this case also. All of the 16 patients treated intravenously received a second injection after three or four weeks. The serum reaction in 7 out of 10 was negative a month after the second injection. The other cases have not yet been examined.

The number of cases of early syphilis treated in which, in addition to the chancre, there were other signs of infection namely, fever, headache, sore throat, and exanthemata—is 80; of these 6 received, in the first instance, intramuscular injections of clear alkaline solution: 17 received neutral suspension in the scapular region; the rest were injected intravenously. dosage varied from 0.3 to 0.6 gramme, the majority receiving 0.4 to 0.5 gramme. Of the 17 cases which received neutral suspensions, 8 subsequently received intravenous injections. It is impossible to classify these cases according to the method of injection or the dosage, because some patients were treated by several methods, and the doses depended on the weight and sex of the patients. The general result of treatment in these 80 cases was an almost immediate disappearance of all the symptoms after a single injection. In every instance the chancre healed within a fortnight, and in some cases in five days. Macular and roseolar eruptions disappeared within ten days. Ulcers in the mouth healed within ten days. In three of the cases treated by subcutaneous injection of 0.3 gramme as neutral suspension, relapse occurred before the treatment was repeated. In one case this occurred eight weeks after the first injection, and took the form of iridocyclitis of one eye and slight optic neuritis of the other. A second injection of 0.4 gramme salvarsan as neutral suspension caused the symptoms to disappear in a week. Eight weeks later iridocyclitis reappeared, now affecting both eyes. They did not have the opportunity of seeing the patient at the time of the second recurrence. He was treated with mercury, which caused some improvement, but after six months of such treatment the serum reaction was still positive. It is important to note in connection with this case that the drug in neutral suspension was imperfectly absorbed on both Considerable swellings were occasions. present at the sites of injection several months after treatment. The other two cases which relapsed had also been treated with neutral suspension, and in each case the drug had been imperfectly absorbed. Intravenous injections produced immediate disappearance of symptoms in both cases, and the patients are still well six months later.

The number of cases treated in the late secondary stage was 32. Each of these had been refractory to previous treatment with mercury. They presented severe lesions of the skin and mucous membranes-for example, deep ulcers involving the subcutaneous tissues, and extensive necrosis of tonsils, soft palate, and turbinate bones. every case salvarsan produced complete arrest and healing of the local condition. As regards the method of treatment, seven received subcutaneous injections of neutral suspension in the first instance, and six of these received an intravenous injection subsequently. The remaining 25 were each treated by two intravenous injections. 18 out of the 32 cases the serum reaction was negative one to three months after the second injection; in the remaining cases the time which has elapsed since treatment is too short to admit of any conclusion.

A woman with a secondary syphilis and in the sixth month of pregnancy was treated with 0.4 gramme intravenously, repeated after five weeks. A healthy child was born at full time, and six months after the birth both mother and child were in good health.

The number of cases treated in the tertiary stage was 14, including gummata, indolent ulcers, periosteal thickenings, and severe forms of neuralgia. The gummata disappeared and the ulcers healed in every instance. One case of severe trigeminal neuralgia in a woman who had never had any symptoms of syphilis, but whose serum gave a positive reaction, was cured after an intramuscular injection of 0.5 gramme in Severe neuralgic clear alkaline solution. pains in the legs in two syphilitics, twenty years after infection, disappeared after one intravenous injection of 0.4 gramme in each case.

The number of cases of general paralysis of the insane treated was 58. In 12 patients there has been a marked amelioration

of symptoms, and six of these are now free from restraint and pursuing their ordinary work. In addition, seven cases of locomotor ataxia have been treated; in three there has been marked improvement. It must be noted, however, that while distinct benefit has been obtained in "parasyphilitic" conditions, the results are much inferior to those in the more recent manifestations.

Three cases of congenital syphilis with late lesions have been treated. Here also the results are less satisfactory than in recent syphilis. The symptoms in such cases disappear slowly, and the serum reaction tends to remain positive. One case of an extensive skin syphilide in a boy of fifteen healed excellently, and the serum reaction became negative after one subcutaneous injection (0.45 gramme, which was poorly absorbed) and two intravenous injections (0.2 and 0.27 gramme).

In regard to the advantages and risks of salvarsan it may be said that the effect of the injection is, in most instances, immediate, and intravenous administration causes practically no discomfort. One injection is more efficacious than a prolonged course of mercury. Symptoms disappear and ulcers heal rapidly; not merely does this diminish chances of spreading infection, but it saves the patient from the grave consequences of chronic lesions. which have proved refractory to mercury generally yield at once to salvarsan. intravenous injection the drug is brought into contact with the tissues in maximum concentration; hence the conditions are most favorable for sterilization.

Browning and McKenzie have given about 400 intravenous injections, and have observed no serious result. The only case showing severe symptoms was that of a man who was seized a few hours after the second injection with much sickness and vomiting, accompanied by considerable collapse. On the following day jaundice was present. In three days the symptoms had passed off. The first injection had been well borne in this case. A complication which may follow the subcutaneous admin-

istration of neutral suspension is the occurrence of extensive necrosis of the skin and the adjacent tissue. Hence this method of injection cannot be recommended. An examination of the literature shows that in most instances fatal results occurred in cases which were in a hopeless condition prior to treatment, or in which the drug had been wrongly administered. into consideration also the fact that salvarsan had been administered about a million times during the first year of its use, they consider that the unfavorable criticisms regarding the toxicity of the drug are without foundation. This applies to statements regarding danger both of death and also of nerve damage following treatment with cocaine and antipyrin as regards safety of administration, and it is probably safer than ether or chloroform.

Much light has recently been thrown on the latency and chronicity of syphilitic infections. It is probable that mercury, especially as ordinarily administered by the mouth, in the majority of cases renders the infection merely latent, so that there is still the possibility of manifestations of the disease occurring at a later date. The object of treatment is to produce complete sterilization. As the best possible means to this end a combined therapy is recommended. The treatment should be begun as soon as possible. Where there is the suggestion of a primary syphilitic lesion, even if spirochætæ cannot be found and the serum reaction is negative, treatment should be begun without delay. An intravenous injection of alkaline solution of salvarsan should be given (0.4 to 0.5 gramme in the case of a man), and this should be repeated in three weeks. After each injection a course of mercurial inunction should be given. Of course, attention should be paid to general hygiene, and there should be abstention from tobacco and alcohol.

The serum test is indispensable for controlling the effect of treatment. It is not enough that the serum should be negative on one occasion; it must remain negative. As the result of inefficient treatment the serum may become negative only tempora-

rily. An examination of the serum should be made at periods of three to six months, and again a year after all symptoms have disappeared. It cannot be too strongly emphasized that the syphilis reaction must be carried out by those experienced in the use of a reliable method; abbreviated and simplified tests are likely only to prove misleading. Thus, in the experience of the authors, there is no method so delicate and so uniformly reliable as that involving the use of lecithin and cholesterin, which has been described by Dr. Cruickshank and themselves.

### CONTINUOUS ANTISEPTIC INHALA-TION IN THE TREATMENT OF PULMONARY TU-BERCULOSIS.

MUTHU in the British Medical Journal of September 23, 1911, reminds us that various antiseptic substances have been brought into use in the inhalation treatment, chiefly carbolic acid, guaiacol, creosote, turpentine, terebene, menthol, pine, eucalyptus. formalin, chloroform, While making some trials on the volatility of antiseptic drugs, the author found that the success of introducing an inhalant into the small bronchial tubes and air-passages was proportionate to the degree of diffusibility of the antiseptic mixture used. Though the choice of selecting an antiseptic mixture is more a matter of taste and experience than any superiority of one set of drugs over another, still the drugs should be so combined that the mixture does not act as an irritant, is pleasant and aromatic, and as perfect as possible in regard to its volatility and diffusibility. He uses two or three different solutions to give variety, and to suit the various conditions and idiosyncrasies of patients. No. A solution contains formaldehyde (from 21/2 to 10-percent strengths), menthol, pumiline pine, chloroform, and rectified spirit. No. B solution, in addition, contains guaiacol in 12½-per-cent strength. No. C is a stronger mixture, containing guaiacol, terebene, pumiline pine, menthol, chloroform with rectified spirit; and used at night, or when

formalin is not tolerated. The following are the formulæ of the various solutions:

#### Inhalant A.

Formalin, 2½ per cent; Chloroform, 3j; Menthol, gr. x; Ol. pini pumilini, mins. x; Spt. vini rect., q. s. ad f3j.

#### Inhalant B.

Formalin, 5 per cent; Guaiacol, 12½ per cent; Chloroform, 3j; Menthol, gr. xv; Ol. pini pumilini, mins. xv; Spt. vini rect., q. s. ad f3j.

#### Inhalant C.

Guaiacol, 3ij; Chloroform, 3j; Menthol, gr. xv; Ol. pini pumilini, mins. xv; Terebene, 3j; Spt. vini rect., q. s. ad f3j.

About 10 drops to be sprinkled on the cottonwool every half to one hour.

As formalin solution contains more than 50 per cent of water, formaldehyde (in the form of gas) is conveyed into the inhalant to make it more volatile.

To give an example of what is done in the sanatorium: When a patient is admitted in an early stage, with practically no fever or cough, he is given two hours of inhalation, which is increased to four, six, and then eight or nine hours a day; and as he improves, the hours are reduced to six. then four, and before he leaves the sanatorium to two hours a day. If the patient has a raised temperature on arrival, or his condition is such as to make it necessary to keep him in bed, he has the inhalation all the day, and as far into the night as possible. As the temperature comes down, and his general condition improves, the hours are gradually reduced. Patients begin with the A solution (with 21/2 per cent of formalin), and go on to B, which they use as their standard solution. The inhalant C is generally used at night. In this way the author has treated more than 300 cases and cannot record a single case in which the inhalations have done any harm. Of course a little caution and discrimination are necessary in regulating the dose and selecting the patients. The hours of treatment should be gradually increased so as to give time for the nose and air-passages to get accustomed to the antiseptic vapor. If stronger solutions of formaldehyde cause a soreness of throat or bronchial tubes, weaker strengths, or the C solution, should be substituted. The inhalation should be discontinued in cases of hemoptysis or bad dyspnea.

As to results, the beneficial effects of inhalation have been noticeable in so many cases that it is a sheet-anchor in their treatment, and has become a part of the daily programme of the patient's life. Instances could be given of many remarkable cases of arrest of the disease in a few months, but it might be rightly objected that a few cases of recovery did not prove the value or the efficacy of the treatment. So the writer prefers to give the result in general terms. Leaving the first three years, when the inhalation treatment was in an experimental stage, more than 300 cases were treated from 1900 to 1910 by the inhalation method, of which about 52 per cent have got quite well—that is, well enough to resume their old or take up some new occupation. Analyzing according to the different stages, he finds that about 80 to 85 per cent were in the early stage, 40 to 45 per cent in the moderate, 8 to 10 per cent in the advanced stage. The question may here be raised as to how far this result is due to the open air alone or to the inhalation treatment. Though it is impossible to analyze exactly their relative merits, he makes the statement without hesitation that all the recoveries are not entirely due to the open air alone, for the following reasons: (a) Recovery in some cases was so remarkable that it cannot be attributed to open air; (b) patients who carried out the open-air treatment before they came to them began to improve very soon after they were put under continuous inhalations; (c) where the open air failed to bring down the temperature and expectoration, the inhalation succeeded in doing so in a good number of cases; (d) comparing the two periods, the percentage of results is greater when the inhalation was firmly established than in the preinhalation days; (e) improvement has been effected even in patients living at home and those attending the out-patient department of hospitals, who for many reasons could not carry out the sanatorium treatment; (f) even in advanced cases the writer has noticed a decrease of fever and expectoration, and a slight improvement all round, making the patient's life more easy and bearable.

# THE MANAGEMENT OF EPIDEMIC SUMMER DIARRHEA AND VOM-ITING, INCLUDING THE USE OF SALINE INJECTIONS.

To the British Medical Journal of September 16, 1911, WALLER and WALKER contribute a paper on this topic and describe their method as follows:

On admission the stomach is washed out with saline (0.9-per-cent solution) at a temperature of 110° F. The gastric contents are often exceedingly foul-smelling and copious. With very few exceptions vomiting ceases absolutely and does not recur. The rectum is next washed out with saline at a similar temperature, the irrigation continuing until the return flow is clear. done in this order time is saved, as the bowels usually move freely during the gastric lavage, and the subsequent rectal irrigation is a shorter proceeding. If any great degree of collapse or shock is present a mustard bath, or in extreme cases a mustard pack, is given, and is one of the most useful remedies that can be employed. child will, as a rule, then sleep quietly for an hour or so, during which time a subcutaneous infusion of normal saline, or of a 5-per-cent solution of glucose in normal saline, is started.

The method of introducing the fluid under the skin is a point of some importance. It has been found that the usual way of conducting the fluid along india-rubber tubing from a supply situated some distance from the child is open to distinct objections. The fluid seldom reaches its destination with more than the chill off, and the child may experience no small degree of shock

rather than any benefit. This fact may be easily tested by fitting up a flask containing fluid at a temperature of 180° F., and leading it through tubing three feet long into a wad of cotton-wool in which a thermometer is placed. The conditions nearly represent those of the real procedure, and the thermometer will register about 80° F. this temperature the fluid is absorbed very slowly; in cases of rapid emaciation this is an additional disadvantage. A method which obviates both difficulties is to use one of the inexpensive forms of vacuum flasks now on the market. An india-rubber cork with two holes is fitted to it, and through these two glass tubes are introduced—one, drawn out to a fine point, allows air to enter the flask; the other, which may conveniently be of the "two-way" kind, leads the fluid. Not more than 8 inches of narrow indiarubber tubing are attached to either limb of the two-way tube, and into the ends of each a small silver infusion needle is inserted. A board laid across the sides of the cot, with a hole bored through the center, acts as a support for the neck of the inverted flask.

This simple apparatus has proved so valuable in the wards that it may be worth while to mention a few points about its The cork tubes and needles are sterilized by boiling; the flask is disinfected and scalded out with hot water, and though there is a theoretical objection in that it cannot be boiled also, no untoward results have followed in the large number of cases in which it has been employed. In order to warm the vessel, it is allowed to stand for a few minutes before use filled with sterile water at 120° F. This is then emptied, and the amount of saline prescribed, plus about an ounce to allow for waste, is put in at a temperature of 120° F. This allows for a drop of 15° F. in transit through the tubing, and at 105° F. the fluid has been found to be absorbed most readily.

The child is laid flat on its back, and the limbs secured by bandages tied to the sides of the cot. The abdomen or thighs are prepared as for surgical operation, and when the needles have been inserted they are

covered by a piece of sterile gauze or wool. The temperature of the fluid in the flask has been proved not to drop more than 2° or 3° F. in four hours. The amount usually ordered is about 7 ounces and takes two hours to run in. On one occasion where absorption was very rapid, 30 ounces were given continuously during the night to a baby nine months old with excellent results. The rate of flow can be controlled if necessary by screw clamps or artery forceps on the tubing. A very few minutes is enough to start the working of the apparatus, and when once the fluid is running the nurse is free to attend to other duties. An occasional inspection to watch the rate of absorption is all that is necessary.

The feeding is perhaps the greatest difficulty. Water, perfectly hot, is all that is allowed for twenty-four hours. It is best to feed the child at first with a spoon, as the great thirst induces the baby to take the bottle too greedily, and vomiting results. Whey has been extensively tried as the first food. It answers well, but has the disadvantage of producing a dirty condition of the mouth, even when made freshly every three or four hours. Frequent cleaning of the babies' mouths is undesirable, as it again causes a tendency to vomit. For this reason a 5-per-cent solution of glucose, to which albulactin may be added, is useful. Any real return of vomiting calls for a repetition of gastric lavage, but unless milk is started too early this is unlikely to occur.

Frequent repetition of the subcutaneous infusion is the only way to replace the enormous loss of water from the tissues caused by the frequent stools, and opium has proved very useful in checking diarrhea at certain stages and in controlling the restlessness that is often an accompani-The weight was observed in one case to drop from 21 pounds to 14 pounds in eight days. There were frequent evacuations of large watery stools, which measured in some instances over threequarters of a pint and were passed as often as twelve times in twenty-four hours. Several ounces of saline were injected at twelve-hour intervals under the skin for nine days, and the child began slowly to make up lost ground when diarrhea ceased.

Milk, freely diluted with water and with the addition of sodium citrate, is tried only when the diarrhea has shown signs of subsiding. The strength of the feeds is very gradually increased, but if the attack has been severe and has occurred in a marasmic child, the digestive functions often seem to be entirely suspended for a long while. Open-air treatment has proved of the greatest possible value during convalescence. Of drugs, calomel in repeated small doses (1/10 grain every hour), castor oil 2 to 5 minims, and opium seem perhaps the best; bismuth in anything but quite the late stages, the most deadly. Brandy is useful if its administration is not unduly prolonged.

#### HYPERTONIC SALINE AND PERMAN-GANATE IN CHOLERA AND DIARRHEA.

LEONARD ROGERS has recently spent several weeks in Palermo, where he has had the opportunity of testing under European conditions the system of treating cholera which proved itself so remarkably successful in his hands in Calcutta, where Dr. Rogers is professor of pathology. method in which the treatment is carried out and the principles upon which it rests may be gathered from the paper published by him in the British Medical Journal of September 24, 1910, page 835, and a review of a book on Cholera and its Treatment, published in the Journal of April 1 last, The treatment consists in the page 760. injection-intravenous or subcutaneous-of hypertonic saline solution, and the administration of permanganates by the mouth. By the use of the hypertonic solution alone he obtained a remarkable reduction in the mortality in Calcutta-among native patients the fall was from 60 to 33 per cent. When the injections were supplemented by the administration of permanganates by the mouth, the mortality was further lowered to 23 per cent. In Calcutta the disease was much more severe in Europeans, and the results were not so good; it was therefore

deemed very desirable to test the method in cases of cholera occurring in Europe.

During three weeks in Palermo, where he lived in the cholera hospital and received every assistance from the Italian doctors. Rogers had the opportunity of treating nearly seventy severe cases in the collapse stage. The rate of recovery was between 60 and 70 per cent, a result better than he had obtained in Europeans in Calcutta. The solution which Professor Rogers recommends is composed of sodium chloride, grains 120; potassium chloride, grains 6; calcium chloride, grains 4; water, 1 pint. Tablets containing these salts are made by Parke, Davis & Co. Four tablets to 1 pint make the hypertonic solution; three tablets to 1 pint make a nearly normal solution. As a rule the solution should be given intravenously, although should the bloodpressure be fairly high—say above 80 mm. of mercury-it may be given subcutaneously. If the blood is highly concentrated, as shown by a specific gravity of over 1063 (normal 1056), the injections should be intravenous. The quantity usually required for an adult is about 4 pints; but if the specific gravity of the blood is very high, as much as 6 pints may be necessary, but in that case the last 2 pints should be injected very slowly. As a rule one injection suffices, but should collapse return a second injection should be given, and may be followed by others. Professor Rogers mentions one case in which he found it necessary to give five injections, the total quantity of hypertonic solution injected being 20 pints. The injection is made into a vein laid bare at the bend of the elbow, or, if there is difficulty in finding a suitable vein in this situation, the large vein which usually crosses the internal malleolus may be chosen. A small silver cannula with a stop-cock is tied into the vein, and connected by an india-rubber tube with a pearshaped glass receptacle, graduated in ounces up to 1 pint. The whole apparatus must be sterilized by boiling. The fluid is run in by gravity, and the rate of flow can be regulated by raising or lowering the flask, or by manipulating the stop-cock.

The permanganate should be administered internally from the first. The simplest plan appears to be to make a solution of calcium permanganate (which is less astringent than the potassium salt) of the strength of 2 to 6 grains to 1 pint, and to allow the patient to drink this ad libitum. addition, potassium permanganate should be given in the form of keratincoated pills containing 2 grains each. In adults one pill is given every quarter of an hour for the first three hours, and then every half-hour until the stools become small and colored green, which usually occurs in about twelve hours, and is an indication of oxidation of the bile. By the use of the permanganate the toxins in the stomach and bowel are oxidized and converted into harmless substances. results obtained recently by Professor Rogers in Palermo were particularly good in children, and with his present experience he is convinced that the mortality may be still further reduced by earlier and more frequent intravenous injections. The principles of this treatment would probably equally apply in the case of infantile diarrhea, the solutions being injected subcutaneously, as they were effective in this way in some very young children suffering from cholera at Palermo.—British Medical Journal, Sept. 16, 1911.

#### TREATMENT OF PLACENTA PREVIA.

Schweitzer reports 100 cases of this complication registered in 5603 labors in Zweifel's clinic between January 1, 1907, and December 1, 1910. The presentation was complete in 35 and partial in 65. The maternal mortality was six, but in one instance the patient had advanced tuberculosis, and the share which the obstetric complication had in causing death seemed but slight; therefore the total mortality might correctly be reckoned at a little over 5 per cent. Four mothers died of hemorrhage, one of sepsis; 65 continuous cases were free from a single loss due to bleeding, but they included an unlucky case, admitted with high fever into the clinic, which died of septic phlebitis; one also out of the four fatal hemorrhage cases was admitted in a hopeless condition, two had lacerations of the cervix, and one succumbed to atony of the lower segment of the uterus. The morbidity of the mothers amounted to 25.5 per cent; 70 were free from fever in the puerperium. Neuritis was reported in one, septic phlebitis in two.

The total infant mortality was 35.5 per There were four twin pregnancies: out of the 104 children in the whole series 37 were still-born, and 50 alive when discharged from the clinic. Seventy-nine children were viable (over 2 kilos in weight); of these, 22 were stillborn, and 50 discharged alive. Treatment was not uniform. Rupture of the membranes (five times), combined version (30 times), and dilatation with bags (39 times) were practiced, as well as more rarely internal version, drawing down a foot, forceps delivery, and craniotomy. One patient underwent Cæsarian section by the Latzko-Zweifel subperitoneal method; she was already reduced by hemorrhage when admitted; there was total placental presentation with undilated cervix and cessation of pains. child was not viable. The patient made a good recovery.

Braxton Hicks's combined version proved best for the mother—that is, if extraction be not practiced immediately after turning, as the risk of deep laceration of the cervix should not be incurred. It should be completed in one stage. The average loss of blood was 335 Cc. The fetal mortality was 68.8 per cent. Combined version is the right procedure when the mother is greatly exhausted and when the child is dead or not viable. The use of dilating bags is far better for the infant; the fetal mortality was but 12.2 per cent. On the other hand, it implies two operations on the mother the introduction of the bag and, when that is expelled, turning and extraction. average loss of blood, 680 Cc., was much higher than in the 30 cases in which version was undertaken. Hence dilatation is unsuited for mothers already reduced by hemorrhage. It is the better course when

the mother has not lost much blood, but the best obstetrical technique must be available and the obstetrician must not leave the patient till she is delivered. In short, the bags are not preferable to combined version in private practice.—British Medical Journal, Sept. 16, 1911.

#### THE PROGRESS OF ANESTHETICS.

The Lancet of September 16, 1911, says that no meeting of the British Association can be recalled in which so many problems of the highest scientific import were introduced under what may be called their popular aspects, and the manner in which this was done is a clear proof that the national education in science, so profoundly hoped for by medical men, is really now proceeding. Many of the papers in the different sections invite medical discussion, as might have been expected, now that the boundaries of scientific medicine are so indefinitely enlarged, but none, perhaps, concerns our readers, the practicing medical profession, more closely than the third interim report of the committee appointed some time back by the British Association to investigate the problem of anesthesia. The committee consists of Dr. A. D. Waller (chairman), Sir Frederic Hewitt (secretary), Dr. J. Blumfeld, Mr. J. A. Gardner, and Dr. G. A. Buckmaster, and its report deals with the commonly accepted principles which control the administration of ether as a general anesthetic by inhalation.

This subject fell within the purview of one of the preceding reports and has occupied the members of the committee during the past year. An attempt was made, which proved successful, to obtain evidence as to whether a 10-per-cent vapor of ether when given by inhalation would be competent to insure anesthesia. It will be remembered that this strength of vapor in air given to the lower animals in the laboratory by a continuous method gave satisfactory results. In an appendix to the report the matter is carried further. Ether presented by an open method—i.e., dropped continuously upon an absorbent material and ap-

proximated to the face—was studied. The maximum strength of the vapor so produced in the ordinary course of the induction and maintenance of surgical anesthesia was found in one observation to be 20 per cent. This maximum fell during the continuance of the administration as the result, we are told, of evaporation and cooling. second observation the percentage was found to be 14.6 after an interval of two minutes, and 11.6 after twenty-four minutes. A third observation gave a percentage of 9.2 after sixteen minutes; while in a fourth case subsequently to a twelve minutes' inhalation the percentage strength of the ether was estimated to be 9.7. In this case an attempt was made to increase the percentage to above 12, but this was found to be impossible by the means adoptedviz., adding excess of ether.

The points which this interesting research appears to enforce are that the method of giving ether by an "open" system, while it induces adequate anesthesia for human beings, yet automatically keeps the strength of the vapor within the limit adopted by the committee as being safe—10 per cent. The history of ether administration reveals curious oscillations of fashion. In its initial trials as an anesthetic, besides the attempts made to supply a vapor by means of the crudest of inhalers, a quasi-open plan was adopted, but proved unsatisfactory, owing to the fact that no attempt was made to attenuate the strength of the vapor supplied, with the result that distressing sensations of strangulation arose and dangers occurred incident to the wild struggles of the unfortunate patient. On the continent. where a modified open method is much in vogue, such as that adopted by Dr. Dumont of Berne, enormous quantities of the anesthetic are used, and the patients appear in many instances to be liable to postanesthetic dangers such as pulmonary or renal irritation.

The plans so popular in England at the present time, which are based upon those introduced from the United States, are less open to adverse criticism. They avoid the deleterious addition of an impervious cover

to the mask, and permit free throughbreathing, thus insuring evaporation and the automatic adjustment of the strength of the vapor inhaled. Again, in frequent cases the plan is adopted, the importance of which has been insisted upon by so many of the continental surgeons, of systematic dropping applied to the ether supply instead of the douching in bulk, which is at once wasteful and open to a charge of producing grave consequences. Sir Frederic Hewitt, in one of the appendices, deals with the subject of open ether, and his experience of it has led him to eulogize the method; indeed, he appears to regard it as superior to others involving the employment of closed inhalers such as those due to Clover, Ormsby, and the countless modifications of these types. The simplicity of the procedure commends itself to all who have acquired the technique, and those who extol it appear to believe that the incidence of danger to life during its use is not greater than is inherent to the performance of severe surgical operations upon patients in a condition of physical collapse. This point cannot be decided so far, nor must too much importance be attached to the distress which many patients experience as the result of the clinging and persistent odor which prolonged ether inhalation leaves behind it.

It is perhaps premature as yet to accept the view enunciated that ether will as a result of the improved methods of its use wholly supersede chloroform in surgical anesthesia. We may well suppose that many will take a more conservative line, and while advocating a wider adoption of ether in surgery will yet regard chloroform as possessing merits all its own which single out that anesthetic as ideal in certain circumstances. The report and some of its appendices, indeed, deal with chloroform and reaffirm its comparative safety when employed by scientific and precise methods. The researches of Snow, and later of Paul Bert, initiated the dosimetric method of giving chloroform vapor, and established by experiment and clinical observation that there exists a limit of safety-a 2-per-cent

vapor of chloroform in air. Their researches have been elaborated recently by Dr. A. D. Waller, by the Special Chloroform Committee of the British Medical Association, whose report has been lately published, and by others. From the report it is learned that the balance chloroform inhaler, the invention of Dr. Waller, which supplies an exact dosage, has been adopted in the practice of St. George's Hospital, and experience with it has further shown the safety of a 2-per-cent vapor, while it has supplied a valuable means of teaching students the principles of dosimetry as applied to anesthetics.

Mr. A. G. Vernon Harcourt, the inventor of the well-known dosimetric chloroform inhaler which has been so widely used with good results, read a paper before the British Association during its recent meeting, and pointed out that the inhaler which he has perfected, while being simple and portable, fulfils its primary object—namely, to supply and control a chloroform and air mixture of definite percentage value. The technical details of Mr. Vernon Harcourt's discourse are not dealt with in this place, although it repays careful study. Whether or not we admit that the last word has been said upon the vexata quæstio, "Is ether or is chloroform to be adopted to the exclusion of the other?" and, again, whether the dosimetric methods eulogized in the present report are final or tentative, none will gainsay the fact that public opinion is being rapidly aroused to the importance of the questions which have been mooted.

Anesthetics to-day are needed so constantly and so imperatively that it is essential that the public should be safeguarded. It is of no avail to perfect methods unless the public are made aware that safety lies not in their individual ability "to take an anesthetic well," but in the ability of the administrator to give it well. Nor can such a thing be possible in the case of all and sundry. By dint of careful teaching and opportunities of constant practice medical men acquire this power, and it is to the interest of the public both that the education of our medical students

should be perfected in this regard, and that this procedure of surgery should be restricted to those who possess adequate and recognized surgical and medical qualifications, at least when the graver procedures of surgery are in question. Every thoughtful person will agree that all unqualified practice is an evil, especially to the public at large, but this evil becomes greatly accentuated when the unqualified practitioner employs such powerful drugs as fall within the armamentarium of the anesthetist. Various attempts at legislation upon this subject have been made, and now a draft bill has been lodged at the Home Office to the terms of which there seems a general consensus of professional and official agreement. We may well hope that not only the administration of anesthetics but other departments of the healing art will in the near future receive more protection, since the legislation required is aimed not at safeguarding the pockets of the medical profession but at protecting the public-all of them, and not only the poor and ignorantfrom the perils of unqualified practice.

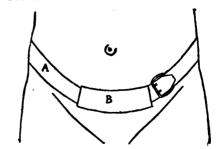
# THE MECHANICAL TREATMENT OF GLENARD'S DISEASE.

McCaskey says in the Journal of the American Medical Association of October 28, 1911, that the treatment of splanchnoptosis is one of the most difficult problems confronting the practitioner, and especially is this true of the rather extreme type of cases which fall into the hands of the internist. We need all the help we can get from every possible angle, mechanical and The pathology is many-sided medicinal. and its successful therapeutics must be equally so. While attending to other features of treatment, in many cases mechanical support of some sort is absolutely essential.

For many years the author has been trying a great variety of mechanical supports as adjuvants in the treatment of this condition, including corsets, bandages of various sorts, with various modifications of the adhesive plaster support suggested by Dr. Rose. These adhesive strips, variously modified, have given better results than anything else. Considerable difficulty, however, has been encountered on account of the extensive application of the plaster to the skin, the tendency being to roll up, produce cutaneous irritation, and thus interfere with its continuous use. The mere application, without wrinkling, causes dermatitis in many cases. In order to accomplish permanent results, it must be kept up for a long period of time. Recently, in order to escape some of these difficulties and at the same time retain the advantages of adhesive plaster, a combination of the latter with the bandage has been used. The primary object is to get the point of support as low on the abdomen as possible. The support should be easily removed, its tension readily adjusted at any time, and the area of plaster applied to the skin reduced to the minimum, in order to limit the extent of the skin irritation, when, as often happens, this results from the contact of the plaster.

A strip of zinc oxide adhesive plaster 2 or 2½ inches wide and about 5 or 6 inches long, the length varying with the size of the patient, is placed transversely across the extreme lower abdomen as nearly as possible to the pubes, the hair having been shaved clean for this purpose. To each end of this strip of adhesive plaster is attached a bandage of about the same width, long enough to reach around the body above the iliac crest, and be tied or otherwise fastened behind, or better, one end long enough to reach around and fasten at the opposite end of the plaster. the ends of the plaster have a tendency to become loosened and pull up by traction of the bandage, this can be prevented by a narrow vertical strip across each end of the adhesive strap and applied to the skin above The bandage itself is well and below. padded with cotton, either folded within it or applied to the body immediately beneath it. This prevents any irritation of the skin from the bandage and permits of its being drawn as tightly as possible in der to furnish the necessary support from below. If it is a little too tight, it can be easily adjusted and can be entirely relaxed at night, if thought advisable, although it is better to keep some support during the night as well as during the day. great difficulty with the adhesive straps carried entirely around the body is that if applied somewhat too firmly they cause irritation, and the difficulty of removal complicates their management very much. By means of this fixed point of support in the lowest zone of the anterior abdomen, the pressure is applied exactly where it should be and does the greatest possible good. Altogether it has given better results with less annovance and is more easily managed than any mechanical appliance the writer asserts he has ever used.

Of course a certain amount of irritation will be produced beneath the plaster in the beginning of treatment, its severity depending on the delicacy of the skin, but the occasional removal of the plaster, cleansing the skin, and using a dusting powder for twenty-four or forty-eight hours will entirely overcome it, and finally it can be used continuously. This. of course, can be done with the plasters applied according to the method of Dr. Rose. Incurable patients have returned after an interval of a year, stating that they were still unable to dispense with their adhesive straps and wore them very nearly continuously, leaving them off for a day or two at occasional intervals.



A device for the mechanical treatment of Glénard's disease. A indicates double-padded bandage; B, zinc oxide strip.

It cannot be too strongly emphasized that mechanical support is only an auxiliary in the treatment of splanchnoptosis. The fundamental defects in the musculature and other structures of the abdominal wall, the lack of tone in visceral supports, imperfect circulation and innervation, together with the neurasthenic state, are so often, indeed, so constantly, associated that they must all be taken into account and therapeutically The most brilliant results that the writer has obtained have followed about one month's treatment in the hospital, with massage, electricity, and such treatment of the digestive tract as the particular case requires, combined with and followed by a prolonged continuance of mechanical support, with correct living, suitable diet, Many of these patients can be substantially cured in this way, even the kidney, which is, of course, usually greatly prolapsed, permanently occupying a much higher position, although it is very rare. according to the writer, for the kidney to go back to its normal position.

In some few of these cases surgical treatment will be required, but it is surprising how many of them, even of the severer type, will yield to prolonged systematic treatment along the lines already indicated; and the very simple mechanical support above described, having the obvious advantage of costing but a few cents, thus making it applicable to all classes of patients, has proved of great assistance to the author.

# SUPRARENAL AND PITUITARY EXTRACTS.

The New York Medical Journal of October 28, 1911, reminds us that suprarenal and pituitary extracts, both agents of comparatively recent introduction, are being widely used. As they are often recommended for the same or similar conditions. and as their physiological actions are in many respects similar, it may be well to call attention to some of the differences, as well as the resemblances, as revealed by recent researches. Both cause a rise of blood-pressure and marked contractions of the uterus; both have a tendency to cause glycosuria; both are used as vascular and uterine stimulants. These effects are, however, at least in many cases, due to fundamentally different causes; a knowledge of these may aid in defining more accurately the uses of the extracts.

It is now possible, through one of the most important of recent generalizations in physiology and pharmacology, to discuss nearly all of the physiological effects of the suprarenal extracts, or adrenalin, from one standpoint, its effects upon the endings, or, more correctly, the myoneural junctions of sympathetic nerves. Throughout the entire body the effects of adrenalin are the same as those of stimulation of the sympathetic nerves. The action of pituitary extracts, on the other hand, has not, so far as is known, any relation to the sympathetic nerves; in the case of organs composed of plain muscle the latter is stimulated directly.

As is well known, there are three important vascular areas which are not controlled, or only very weakly controlled, by vasoconstrictor nerves, the brain, lungs, and heart. Adrenalin has little, if any, constricting action upon the vessels of these organs; it is said to be almost useless in operations on the brain. The vessels of these areas are, however, contracted by pituitary extract. After a very brief period of stimulation the heart is weakened by pituitary extract; this effect seems to be due to the constriction of the coronary ves-The weakening of the heart from pituitary extract causes a fall of pressure in the pulmonary circuit; the general vasoconstriction causes a rise in systemic pressure which counteracts the tendency to anemia of the medullary centers which results from cardiac depressants. Wiggers (Archives of Internal Medicine, July 15, 1911) believes that this combination of actions peculiarly adapts the pituitary extract for use in hemoptysis. The fact that adrenalin, through its stimulating action on the heart, increases the pressure in the pulmonary circuit would contraindicate its use in certain cases of pulmonary hemor-

Both adrenalin and pituitary extract have been warmly recommended in uterine atony and postpartum hemorrhage. Many recent writers (Foges and Hofstätter, Hofbauer, Neu, and Stern, for example) have laid special emphasis upon the value of subcutaneous or intravenous injections of pituitary extract, maintaining that this drug has advantages over ergot. When adrenalin causes uterine contractions it is from a stimulation of sympathetic nerve endings; pituitary extract stimulates the muscle cells directly. Dale found that adrenalin normally causes a relaxation of the uterus in some (non-pregnant) animals; this also occurs in other animals (pregnant as well as non-pregnant) after large doses of ergot.

If these conditions hold for man, the use of adrenalin with ergot or after it would be contraindicated, whereas that of the pituitary extract would not be valuable.

Bell, Klotz (Münchener medicinische Wochenschrift, 58, p. 1119, 1911), and others have recommended pituitary extract in intestinal paresis after operation; it causes a contraction of the smooth muscle. Adrenalin, on the other hand, causes relaxation of almost the entire alimentary tract (in accordance with the sympathetic innervation), contracting, in most animals, only the sphincters.

Both extracts have important relations carbohydrate metabolism; adrenalin causes glycosuria, pituitary extract a lowering of carbohydrate tolerance and frequently glycosuria. Borchardt found glycosuria in forty per cent of 176 cases of acromegaly (hyperpituitarism). Goetsch, Cushing, and Jacobson (1911) found increased tolerance for carbohydrates in conditions of hypopituitarism. consider it a valuable aid in diagnosis and a useful guide in therapeutics; in cases of pituitary disease with increased carbohydrate tolerance (as in late cases of acromegaly) the administration of pituitary extracts is indicated; in cases with diminished carbohydrate tolerance, or with glycosuria (as in early acromegaly), such medication is contraindicated.

There are indications of a relation between lowered function of the suprarenals and carbohydrate metabolism; the sugar content of the blood in Addison's disease is said (Porges) to be so lowered as to account in part for the characteristic asthenia; the latter is said to be relieved by the administration of sugar. The nature of the relation of the pituitary to carbohydrate metabolism is obscure.

Bab has recently (Münchener medicinische Wochenschrift, Aug. 22, 1911) advocated the use of pituitary extract in osteomalacia, in which suprarenal extract has been much used; both glands are known to be antagonistic to the sex glands, and, according to Fehling and others, there is superactivity of the ovaries in osteomalacia.

It will be some time before some of the suggestions as to the therapeutical uses of these drugs are thoroughly tested, but these illustrations show what a wealth of physiological data concerning them is being collected.

In the Archives of Internal Medicine of November 15, 1911, McCord reaches conclusions, which are somewhat at variance with these views, as follows:

1. The depressor action of pituitary extract elicited by repeated injections is not due to the fatigue of any peripheral mechanism, nervous or muscular. Perfusion experiments indicate that it constricts all the blood-vessels of the body by a direct action on the muscles of the arterioles, and often-repeated injections show practically no decrease in the constrictor reaction.

Organs removed from animals giving only a depressor reaction with pituitary extract show on perfusion with the extract in Locke's solution the typical constriction of their vessels.

- 2. The depression of blood-pressure following numerous injections of pituitary extract is not due to an overbalancing of peripheral constriction by a central dilator influence. Such a counteracting dilator influence of central origin is always weak and no more pronounced after repeated than after the initial reaction, and moreover it does not come on until the fall of pressure is at its lowest.
- 3. Sudden depression or slowing of the heart, though occasionally showing as a

notch in the blood-pressure records, is not the cause of the typical drop in pressure obtained after repeated injections, for such depression is not similar either in conformation or in time to the depression obtained by the latter means, and may in fact exceptionally occur with a strengthened heart.

4. Experiments indicate that when the blood becomes sufficiently saturated with pituitary extract, an interaction takes place which converts its constricting action on the peripheral vessels into a dilating one.

# THE RATIONAL TREATMENT OF FURUNCLES.

In the Journal of the American Medical Association of September 16, 1911, SKILL-ERN asks, Given a furuncle late in the first stage, what is the most rational method of treatment? It would seem to be to establish an outlet, not for the beneficent serum and leucocytes, but for the products of liquefaction necrosis which are formed by nature according to her best judgment, secundum artem. With the scalpel scratch off the little central vesicle; this causes no pain. A drop of sero-pus follows and the ulcerating hair-follicle and sebaceous gland are exposed. Apply a Bier cup and suck out as much as possible of the exhausted serum and blood. In the wake of the latter from near-by tissues comes fresh blood, with fresh serum and fresh, vigorous leucocytes. It is these that are going to cure the furuncle, and not the surgeon's The knife inflicts unnecessary trauma and gives the tissues two lesions to deal with instead of one. Often the vesicle does not even have to be scratched, in which case the cuticle is thin enough to be readily ruptured by the cup alone. Apply a dressing of plain sterile gauze wrung short of saturation from a solution of normal saline with sodium citrate. An important consideration in this method of treatment is that of drainage. If a gauze drain is inserted, it plays the rôle of a cork in a bottle. If left alone and allowed to dry, the lymph coagulates, thus plugging the furuncle.

In keeping with modern pathologic con-

ceptions, what is desired is free bathing of the bacteria with fresh serum from the blood, with its highly antitrophic power. Sodium citrate, one-per-cent solution, precipitates the calcium salts in the lymph and insures a comparatively free outlet of the lymph discharge. By osmosis, the sodium chloride sets up a flow of lymph through the walls of the furuncle, the citrate maintaining the fluidity of the serum. Thus there is brought about a continuous flow of lymph of high antitrophic power from the congested blood-vessels through the wall of the furuncle and out through the wound. A bit of rubber dam may in addition be inserted if there is much tension on the outlet. The citrate is required for only about three days, and during its use the surrounding skin should be protected from pustulation by an ointment. The patient may make up his own solution for home use by adding a teaspoonful of sodium citrate and two and one-half teaspoonfuls of table salt to a glass of hot boiled water. Over this aseptic drain-poultice apply a piece of waxed paper or oiled silk, then a compress of non-absorbent cotton or wool and a cotton bandage. If the patient is going to lay up, leave the dressing open, instructing him to renew the drain-poultice The solution prevents the frequently. vesicle crusting over and the gauze absorbs the products of disintegration as nature dispenses them. Sodium citrate should also be administered internally, 15 grains three times daily after meals, both for its alkaline action on the blood, and for its diuretic action on the kidneys. The cupping and dressing may be repeated and renewed frequently (every four hours) until the slough is loose, when this may be readily removed by a pair of small dressing forceps. After this, no matter how the resolving furuncle is treated, resolution proceeds rapidly and uninterruptedly, and the resulting scar is always the smallest obtainable in proportion to the size of the furuncle. In most cases it is invisible.

In some cases the granulations, instead of being firm, red, and rapidly growing, are flabby, bluish, and sluggish. The trouble

here it is believed is due to relaxation of the tissues and mobility of the part. These conditions may be overcome by strapping the edges of the wound with adhesive strips, which compress the granulations and immobilize the skin. Then the granulations are dried, mopped with tincture of iodine, and dusted with Bier's powdered nitrate of silver. Exuberant granulations should be snipped off with scissors; for, as Colles long ago pointed out in his lectures. the silver stick does not "burn down" granulations, as it is commonly supposed, but stimulates them. To promote epithelial regeneration-which, in this method, has a very limited area to cover-8-per-cent scarlet-red ointment or amido-azotoluol may be employed.

The author objects to flaxseed poultices on the ground that, while they may soothe the patient, yet they devitalize the edge of the furuncle, prolong the period of resolution, and leave a legacy of an unsightly depressed scar. He objects strongly to the bichloride of mercury on the ground that it is a corrosive poison, that it devitalizes the vigorous leucocytes and disintegrates the beneficent serum; that it destroys feeble bacteria in the depths of the wound, and that on tender skin it causes pustules to spring up anew. He asserts that he is unalterably opposed to incision for the reasons given above. If incise you will, then excise the furuncle entirely; otherwise withhold the knife.

How is autoinoculation of the adjacent hair-follicles to be prevented? By shaving the area of skin wide of the furuncle and disinfecting it with 70-per-cent alcohol or tincture of iodine with benzine, a dilution of liquid formaldehyde or of aluminum acetate. Local disinfection should be repeated at each dressing, benzine being an excellent medium to thoroughly cleanse the skin of wound discharges, effete products, and remnants of adhesive plaster.

Of course, if a patient presents himself for the first time with a furuncle well advanced in the second stage, where there is marked softening and fluctuation, in fact, merely a subcuticular abscess, a small incision through the thinned skin is indicated on the surgical principle of ubi pus ibi evacuo. This principle is in no way applicable to a furuncle in the first stage, because there is no pus to be evacuated. The writer strongly objects to squeezing a furuncle in any stage. Squeezing is unsurgical in that it causes acute suffering quite needlessly, traumatizes the furuncle, breaking the barrier of protecting leucocytes, and provokes hemorrhage, which interferes with drainage. Make the drain, aided by the Bier cup, remove the pus. It is less painful and at least equally efficient. To hasten the subsidence of the enlarged lymph-nodes and of the acute hyperplasia about the furuncle, thiosinamine may be given by mouth in 11/2-grain doses three times daily after meals.

# THE MODERN MANAGEMENT OF PNEUMONIA.

BARUCH in the Medical Fortnightly of September 25, 1911, states briefly the elements of his present management of a pneumonia case, and promises that the method, if such it be, is an evolution resulting from many sad failures and disappointments from other methods.

Absolute Rest.—This should not only be advised, but the perfunctory execution of the order must be prevented. The family may be assured that the disease will be one of short duration, and that it is imperative to place all the resources of the household at the disposal of the physician. The best room in the house or apartment (especially in the latter) must be selected, where the patient may be completely isolated from the family and friends under the care of a nurse or a member of the family. He must not be allowed to leave the bed for any purpose. All mental and physical effort must be avoided. This is no easy task for the attendant, we all know.

The use of the bedpan and the urinal will be especially resented. The author has in mind a prominent colleague in San Antonio, Texas, whom he saw during a brief sojourn in that city while en route from

California. Although the patient was so ill that his life was despaired of, he could not be prevailed upon to use the bedpan until his attention was drawn to the fact that his pulse was accelerated and enfeebled after each visit to the toilet. His recovery from desperate straits may be attributed as much to his obedience to the injunctions to avoid exertion as to the other elements of the treatment.

Ventilation of the Sick-chamber.—This also demands the personal supervision of the physician. Repeatedly, the author asserts, he has examined the windows and found them opened a few inches and the opening closed by a neatly fitting shade. In very cold weather the nurses may be guided by their own sensations in executing the order for free ventilation. It is well to direct that the nurses protect themselves by extra clothing; the patient is protected against cold by the febrile temperature, and a nightcap and blankets may satisfy the relatives on this point. He does not approve of placing the patient under a window, or as is now quite the vogue in cities, on a veranda, roof, or fire-escape. There is no doubt, however, that the free admission of oxygen by thorough ventilation during the early course of the disease prevents the need of oxygen inhalations in its later stages, because it enables us to add to his resources for resisting toxemia.

Food.—Inasmuch as the patient is usually attacked in the midst of health and the duration of the disease is not long, a moderate diet has been adopted. Clinical experience teaches that in many severe types of pneumonia there occurs intestinal distention which so embarrasses the patient that sleep is impossible, and often hastens a fatal issue by interfering with respiration and disturbing the heart. It is important, therefore, to so arrange the diet that fermentation be prevented. Four ounces of broth into which a teaspoonful of barley jelly has been stirred, alternated with four ounces of hot milk taken in spoonfuls and slow sips every two or three hours, suffice during the entire period of the disease. During convalescence and after the crisis the diet may at once be made liberal. The dread of not sustaining the patient's vitality has too often led the author to ply the patient with concentrated foods which have served to handicap him rather than aid him in the struggle. Sleep should never be interrupted for any purpose, provided it be normal. It is his rule in all acute diseases to omit baths, compresses, medicines, food and drink during normal sleep.

Drink.—The systematic drinking of very cold water is important. The nurse is directed to administer a few drops of some placebo in cold water every two hours. The quantity actually taken is to be made part of the record. The action of ice water upon the gastric nerves and vessels is the same as its action would be upon the skin; it refreshes it by the local shock and consequent reaction, it increases diaphoresis and diuresis. It has often been observed that the urine is doubled, and in one case of pneumonia the twenty-four-hour record was 110 ounces. That this method of administering ice water is far more effective as a diuretic than larger quantities of warm water is an important fact not generally recognized.

Stimulants.—In this scheme of pneumonia management the application of stimulants is rarely necessary, except in persons who are accustomed to its habitual or frequent use, and to whom it is as necessary as food. Among many illustrations of this practice the author mentions a consultation case of grip-pneumonia, the patient being sixty-five years old, a diabetic, and the urine giving the acetone reaction. lungs became successively involved, the case became desperate, and yet the management here outlined sufficed to carry the case to a favorable issue. Of course the acetonuria was met by large doses of bicarbonate of soda per rectum. In a case of. pneumonia in his own family, two tablespoonfuls of brandy were given occasionally to cheer the despondent patient (by suggestion). This was the only stimulant administered, although the case was of desperate type. Patients accustomed to alcohol may receive one or two ounces of

brandy every three hours, according to their previous habits. The prognosis in these patients is almost always fatal, because their peripheral vessels have been enfeebled by dilatation produced by alcohol, and their nervous system deprived of capacity to respond to cold applications.

Medication.—The author asserts he still pursues the custom to open all cases of pneumonia with eight or ten grains of calomel, for the purpose of clearing the decks for action, as it were. The calomel is administered dry upon the tongue and washed down with water. How much may be contributed to the good result by the well-known property of mercury of destroying the diplococcus, which is most abundant in the mouth, he is not prepared to claim. Several copious stools result; if these are absent, they may be furthered by citrate of magnesia administered six hours later. Calomel is probably the best intestinal antiseptic we have. All fermenting material being thus removed from the intestinal canal, the distention which so often handicaps recovery in the advanced cases of pneumococcus toxemia is prevented. Small doses of calomel—one-tenth of a grain frequently repeated-which are so much in vogue, irritate the intestinal canal and disturb rest by their frequent adminis-Strychnine is sometimes useful tration. when the first sound of the heart becomes feeble. It should be administered by the physician hypodermically in doses of onethirtieth grain; unless slight trismus is noticed it is inert. The precordial ice-bag, intermittently applied, is superior to strychnine as a cardiac tonic. It should be removed every half-hour for fifteen minutes. Small doses of the coal-tar preparations are often used as calmative agents when the restlessness is due to high temperature. One dose of six grains of antipyrin once in twenty-four hours is far more useful, and certainly more safe, than chloral or sulphonal. [With this view the editor is not in accord.—ED.] The routine use of antipyretics for temperature reduction is damaging to the heart and excretory organs, but the infrequent administration of

one dose to allay restlessness due to high temperature is valuable. The mouth should be kept clean and sweet by gargling with a saturated solution of chlorate of potash . every hour.

# ADRENALIN AS AN EPIDERMIZING AGENT.

Under the title of "Das Adrenalin in der Nachbehandlung der Totalaufmeisslung der Mittelohrräume," Dr. I. David publishes in the Monatsschrift für Ohrenheilkunde und Laryngo-Rhinologie, Nov. 10, 1911, an interesting article, in which he writes as follows:

He does not know whether any one has recognized the property of adrenalin to stimulate the reformation of epithelium. He has used adrenalin in the after-treatment of radical operations for two months, and this preparation, which he employed for the hemostasia of the bleeding granulation surface of a burn, which he had cleaned for a Thiersch graft, seemed to him to prove a brilliant epidermizing medicament; this led him to a trial of adrenalin in the after-treatment of the total chiseling open of the middle-ear cavities in order to hasten the skin formation.

Since the end of February, 1911, he has used adrenalin for dressings after radical operations on the middle-ear cavities, and he would regret having to forego the use of it.

His modus operandi is as follows: After completing the total chiseling open, and disinfecting the skin strip intended for the operation, he fills out the wound with Vioform gauze. After changing the dressing for five or six days, he plugs the cavity and the auditory meatus daily with adrenalized hemmed gauze strips and places on the auricle a layer of dry gauze and wadding.

David uses the 1:1000 adrenalin solution of Parke, Davis & Co., and cannot say anything of the action of similar preparations. He moistens the gauze strip without soaking it, by taking the necessary quantity from the original bottle by means of a sterilized dropper. He never introduces the gauze strip or the bandage forceps into

the bottle, for fear of contaminating the original solution. Later on he cuts the adrenalin strip to cover a little more than the granulation surface; where the epithelium is already present he only places dry gauze strips. Under this dressing the secretion from the wound is soon reduced; on changing the dressing the operation cavity is almost dry, the eruption of the granulations is diminished, and the epithelizing progresses quickly.

Adrenalin has proved itself an important time-saving medicament to him in the after-treatment of radical operations. As regards after-effects of this adrenalin treatment, there are none. The preparation does not irritate the wound or its surroundings in the least.

Finally, David would like to report the results he has obtained with adrenalin in the treatment of other aural affections. Starting from the idea that adrenalin exercises a beneficial action on the skin, he has used it in cases of discharging eczema of the ear. He introduces daily an adrenalized gauze strip, and where possible he also wraps the auricle round with adrenalized gauze. He thus obtains a speedy cessation of the discharge of the auditory meatus, and a decrease of the swelling of the auricle; the irritation soon diminishes, and the whole course of the illness runs much better than with the usual therapy.

# THE TREATMENT OF TUBERCULOUS PERITONITIS.

ROLLESTON writing in the British Medical Journal of September 2, 1911, upon this topic says that treatment may be conveniently divided into (1) general hygienic treatment, (2) medicinal treatment, including diet, (3) treatment by vaccines, (4) x-rays, (5) surgical.

Hygienic Treatment.—The patient should be kept absolutely at rest in bed, and as far as possible in the fresh air and in the sun. When the disease has been arrested the patient's life should be regulated with the same care as in pulmonary tuberculosis.

Medicinal Treatment.—Drug treatment

does not play an important part in the treatment. As iodine and its preparations appear to have special action on tuberculous processes, iodoform and syrup of the iodide of iron are not uncommonly used. Hypodermic injections of iodine with iodide of potassium and guaiacol have been recommended. It has been suggested that the iodine passes into the ascitic effusion and exerts a beneficial action there (Yeo), but according to Landolfi, iodides taken by the mouth do not appear in tuberculous effusions. For flatulence and diarrhea it is probably better to give guaiacol or one of its compounds, such as thiocol or styracol, than creosote, which may be irritating or even toxic. Salicylate of bismuth and salol may also be tried; opium by the mouth may be required for obstinate diarrhea. Opium by the mouth may be necessary for pain, but in older children the author prefers morphine hypodermically.

Local Application. - Formerly mercurial ointment rubbed into the abdomen by a bandage was generally employed, and is worth a trial. Iodine and iodoform may be supplied in the same way. In addition to the benefit derived from the absorption of mercury and iodoform, it is probable that the application of the bandage is important in insuring rest to the abdomen. results have indeed been obtained from simply strapping the abdomen (Knox), and it is conceivable that some of the benefit ascribed to simple laparotomy is due to the subsequent bandaging. The abdomen has also been kept at rest by painting on collodion with or without tincture of iodine.

Diet.—The diet should be nourishing and largely protein, to which cream and fatty food, including cod-liver oil, should be cautiously added. Starchy and vegetable food should be avoided, on account of their liability to cause flatulence. A salt-free diet has been recommended in order to diminish ascites (Alwens), but it is doubtful if there is any advantage, apart from the obvious desirability of preventing mechanical embarrassment, in restricting the effusion; for the ascites may diminish as the patient goes down-hill and plastic peritonitis develops.

Vaccine Treatment.—Opinion on this form of treatment varies as much as it does on the question of operation. Wright recommended it, and Riviere and Latham have also obtained good results. Still, on the other hand, has given it by the mouth, hypodermically, and by the rectum, and in most instances without any effect. author has given it in the small doses advocated by Latham in a number of cases, and in some with subsequent improvement: two cases which made much impression on his mind rapidly went down-hill after, though he asserts he cannot say because of, its use. The value of vaccine treatment in tuberculous peritonitis is put forward for discussion.

X-rays, which have been given a fair trial and which have been favorably reported on by some (Dodson, Urbino), do not appear to be of any real therapeutic value (Allaria and Rovere). Extension and generalization of the tuberculous process have followed this treatment, and as x-rays in excess induce leucopenia, it is obvious that the patient's resistance may be impaired.

Surgical Treatment.—In order to clear the ground it may be stated as generally agreed (1) that operation is contraindicated in generalized or wide-spread tuberculosis. and therefore in infants under twelve months of age and in patients with signs of pulmonary tuberculosis; (2) that it is unnecessary in the fibrous and adhesive forms in the absence of any urgent symptoms of intestinal obstruction; (3) that it is necessary in cases of abscess formation and in intestinal obstruction. It must be remembered that the last complication may be simulated by the onset of tuberculous meningitis. The question of operative interference therefore concerns cases of ascitic abdominal tuberculosis. The much debated question of operation may be introduced by a brief consideration of its mode of action. It has been supposed that operation reduces the feeble vitality of the peritoneal tubercles so that they undergo involution and death. More recently the explanation has been put forward that

peritoneal tuberculosis being a local infection the opsonic index of the ascitic effusion is lower than that of the blood; hence after the removal of the ascites there occurs a fresh effusion which is of a higher opsonic index, and therefore has a curative action on the local tuberculous process (White). If this be true, simple paracentesis should be as effective as laparotomy. vantage of laparotomy, however, over simple tapping is that a local focus of tuberculosis which may give rise to reinfection and relapse after partial or apparent cure may thus be detected and removed (W. Mayo). In this connection it is important to get some estimate of the frequency with which such a focus is present and can be removed. In Mayo's 26 cases in which the Fallopian tubes were removed, 25 recovered permanently, and in 7 of these simple laparotomy had previously been performed from one to four times for the cure of tuberculous peritonitis. On the other hand Stone, who holds a brief for the hygienic as opposed to the surgical treatment, in 122 cases of tuberculous peritonitis of all ages did not find a primary focus in the Fallopian tubes or appendix in any case. Undoubted primary tuberculosis of the Fallopian tubes, though common in women, is very rare in young girls; Murphy quotes Maas as having, after a careful search, only been able to collect 8 cases. As was shown by Murphy's experiments on monkeys, the Fallopian tubes rapidly become infected secondarily in tuberculosis of the peritoneum. In 23 cases of generalized tuberculous peritonitis in female children, 9 showed tuberculous salpingitis (Still). According to Goodall, 99 per cent of the cases of tuberculosis of the Fallopian tubes are secondary, though in from 30 to 50 per cent of these cases the primary focus is not obvious. But secondary infection of the Fallopian tubes may give rise to very considerable enlargement, and the tuberculous focus thus produced, though not primary, may set up reinfection of the peritoneum and so require removal. In a girl aged nine the Fallopian tubes infected secondarily to tuberculous peritonitis were the

size of the index-fingers of an adult, and were removed; ten years later she was in good health (Murphy). Removal of tuberculous glands may be very difficult, and an attempt to do so may leave the patient worse off than before. The argument in favor of laparotomy that a removable tuberculous focus may thus be found is on the whole valid, but not very strong.

It is generally agreed that the ascitic cases do well, whether they are operated upon or left alone. The following questions therefore arise: (1) Are the results better in the operative cases than in those which are treated medically? (2) As some cases begin as ascites and go on to the ulcerative or plastic stages, is there any reason to believe that early laparotomy will prevent this sequel? If so, operation would be justified. On these points statistics would be of value.

Although, as already mentioned, statistics on tuberculous peritonitis usually deal with all forms of the disease, it is desirable to quote some dealing solely with the disease in children. Faludi has drawn up tables showing the percentages of cures in parallel series of cases of tuberculous peritonitis in children, operated upon and not operated upon. The authors he quotes are Cassel, Monti, Pic, Schmitz, Schramm, and Sutherland, who all give parallel series of cases operated upon and not operated upon. The divergence in these statistics is considerable. Schramm found 80 per cent of cures among the operated cases and 64 per cent among the non-operated; Pic observed recovery in 74 per cent of the operated cases and in 5 per cent only of the non-operated; Sutherland observed recovery in 50 per cent of the operated cases and in 81 per cent of the non-operated. By adding up all the operated cases we get 88 cures, or 70.4 per cent, in 125 cases, as contrasted with 51 cures, or 33 per cent, in 156 cases not operated upon. The question of operation on ascitic cases may be fairly summed up in the statement that it should be tried after hygienic and medical treatment has been given a fair trial for a month or so without any definite benefit.

Simple paracentesis is not often necessary and is seldom practiced. After removal of some of the fluid, injections of various kinds through a cannula have been employed; thus sterilized air, oxygen (Schulze), isotonic salt solution, adrenalin (Wynter) have been reported to give good results. The injection of camphorated naphthol is a dangerous procedure (Guinard). The author states he has had no experience with any of these methods.

# THE TREATMENT AND PREVENTION OF MEASLES AND SCARLATINA.

MILNE states, in the British Medical Journal of September 2, 1911, that in the treatment of scarlet fever and measles by the method he is now advocating complications are unknown: in the 800 cases of scarlet fever he has himself recorded, where this method was adopted, no single case with a complication in the throat, nose, ears, glands, or kidneys occurred. Yet these cases had only from 750 to 400 cubic feet of air space apiece, and some were in poor and overcrowded homes. Further, infection and the spread of the disease are unknown if his method is adopted; he has repeatedly shown how patients with scarlet fever may be nursed side by side with healthy children, or with the most serious operation cases, and how they may within ten days attend school and church with 1300 other children, without the occurrence of either infection or complication. Such a thing as a return case is unknown.

He next describes the method of treatment he is advocating. As early as possible in the disease, and without waiting for definite confirmation of the diagnosis in doubtful cases of scarlet fever or measles, the tonsils and the pharynx, as far up and down as possible, are swabbed with 10-percent carbolic oil every two hours for twenty-four hours, or for longer if the swabbing cannot be carried out regularly. Rarely is it necessary to continue the swabbing for longer than this. The swab should be of cotton-wool, firm, the size of the distal phalanx of the patient's thumb, held in a

forceps, or fixed to a piece of wood by a thread. A fresh swab should be used on each occasion. The carbolic oil has the great advantage of relieving pain and enabling the patient to swallow more easily. In addition, the patient is gently rubbed all over with pure eucalyptus oil, from the crown of the head to the soles of the feet. This is done as soon as the patient is suspected of scarlet fever or measles, or as soon as he is found to be suffering from either of the diseases. This inunction with oil of eucalyptus is repeated morning and evening for four days, and once a day for the six days following.

The advantages realized by this method of treatment, not only in the experience of the writer but also in that of every practitioner who has carried it out, are as follows:

- 1. When this treatment is commenced early—and this is vital—secondary infection never occurs, and consequently complications are unknown.
- 2. With this treatment carefully carried out, children may occupy the same room, and even the same bed, without the risk of infection.
- 3. The economy of the treatment. An ordinary case in isolation costs ten pounds and upwards; this perhaps two shillings. Therefore it means a saving of millions of pounds annually.
- 4. Its household economy. The mother is free to attend both the patient and her duties. The father is free to go to work without the slightest risk, and the children equally free to attend school.
- 5. No after-disinfection is necessary, for the disease having been destroyed, nothing remains.
- 6. The author has been frequently asked about the disinfection of the patient's spoons, crockery, etc., as these are such a trouble in an ordinary household. The fact is, there is no disinfection, or in any way a keeping of them apart. They are all collected together, washed in the ordinary way, and served out indiscriminately on the next occasion.
  - 7. In measles, as in scarlet fever, there

is no necessity for the hair being cut short, neither for destroying the toys, books, etc., for these may be safely interchanged as soon as the patient is able to play. The net result is that there is no interruption of the domestic, scholastic, or business affairs of the household.

Such is the simple, sure, speedy, and inexpensive method the author has advised and of which the Medical Times said. "We indorse every word Dr. Milne has written, for we have tried it." Such is the testimony of hundreds of medical practitioners, such as the partial test at Clydebank, "that patients are as well in four weeks as they were in eight by the old system." Moreover, there have been no return cases. It is worthy of note, too, that the experience at Clydebank shows that this method can be triumphantly carried out in some isolation hospitals at least, although the recorded experience in two of the London hospitals has led the writer to form a different conclusion.

#### HAND DISINFECTION.

In an editorial article in the International Journal of Surgery, July, 1911, the conclusion reached is that in the use of the older, elaborate methods, as, for instance, that of Fürbringer, the time required has been a serious obstacle to the busy surgeon. The protection afforded by rubber gloves is uncertain, since, according to Küttner, they are injured in about 50 per cent of major operations. On the other hand, the simpler means of disinfection with alcohol or iodine are more or less irritating to the skin. In other words, under present conditions we are almost as far as ever from the adoption of a universal method of cutaneous disinfection. It is important, however, that whatever plan may be adopted, it should be carried out strictly according to the instructions of its originator, for in this way only is it possible to compare results.

From a study of the literature, it appears that alcohol disinfection of the hands and iodine disinfection of the operative field are the most promising measures as regards simplicity and efficiency that have been suggested in late years for securing the desired end—that is, approximate sterilization of the skin. The alcohol should be 95 per cent, and the hands should be thoroughly dried before its application. In the use of tincture of iodine all washing of the operative field on the day of operation should be avoided, and in urgent cases it has been suggested that the iodine may be applied without previous cleansing. According to Küttner, irritation may be prevented if a freshly prepared 5-per-cent tincture of iodine be employed and the remains of the coating removed with alcohol or ether after operation.

# TREATMENT OF SURGICAL GASTRIC DISORDERS.

BISHOP (Lancet, Sept. 9, 1911) says that concerning the modern operation of gastroenterostomy the reputation of this operation as now performed has suffered greatly from the results of the earlier attempts. which were bound to be tentative. At first performed as a means of relief in a case of gastric cancer where excision was impossible, the earliest method was essentially crude and experimental. A loop of jejunum was brought up over the transverse colon and united to the anterior gastric wall. Crude as this expedient was, it gave great relief in that case and was repeated in many others, but it was speedily recognized as possessing many and serious drawbacks. Chief amongst these was "vicious circle" vomiting. The loop of intestine fixed was long, and when distended with contents it was heavy; kinking of the gut almost always followed, if the patient lived long enough. The loop of small gut also pressed upon the transverse colon, and painful griping was added to the patient's suffer-Von Hacker eliminated the long loop by his posterior method, in which the first part of the jejunum was united to the posterior gastric wall, but at that time and for long afterward it was believed that one essential to success was that the peristaltic wave in both stomach and intestine should pass in the same direction. In order that this might be the case it was necessary that the jejunum should be turned upon itself, thus forming a loop in the afferent limb. A frequent result was that a kink was again formed, with the consequent dilatation of the proximal gut and the reappearance of "vicious circle" vomiting. It was not until the Mayos of Rochester, U. S. A., demonstrated that isotonic peristalsis was not necessary that the present "no-loop" posterior operation was perfected and "vicious circle" vomiting became a thing of the past.

The results of this, the "modern" operation, are all that could be desired. Pain and vomiting cease from the time of operation, the patient rapidly regains the power of taking the requisite amount of food and of digesting it, digestion now apparently taking place in the intestine, and consequently weight and strength are with fair rapidity restored. It is, however, of importance to note that in those in whom the precedent pyloric obstruction has produced an appreciable loss of tone and motility in the gastric walls the full extent of the benefit to be derived from the operation may not be seen for some months. case already mentioned of bilocular stomach is an instance of this, and the writer states that he has seen many others in which the same fact has been noted, but in the majority the improvement is immediate and very striking.

Finally, it has been a source of great interest to watch by means of the radiographic screen the behavior of the new stoma as time goes on in those cases in which it remains permanent. At first the food passes through at once. It is difficult to obtain such observations earlier than the eighth day, the patient not being in a fit condition to bear the exposure, but tracings show that at this time the food does not remain in the stomach any appreciable time but passes at once into the jejunum. Three months after, whilst some passes at once, as soon as the intestine has received a certain quantity, presumably as much as it can at the time digest, the stoma closes temporarily and no more is allowed to enter; a clear space becomes visible between the food retained in the stomach and that in the jejunum. In a little while the stoma again opens and more escapes. This was at one time believed to indicate the formation of a new sphincter around the artificial opening, but is now believed to be due to reflex contraction of the muscular fiber of the gastric wall.

# THE OPERATION OF CHOICE IN CAR-CINOMA OF THE RECTUM.

BLAKE (New York Medical Journal, July 1, 1911) holds that in all growths necessitating the destruction of the sphincter it is preferable to institute a permanent inguinal anus and extirpate the remainder of the rectum. The operation has a low mortality, because there is no secondary infection of the wound, the fecal current being deflected from the site of operation.

In case of neoplasms lying above the anal canal so that it, or at least the sphincter, can be left, the competency of the latter can be even better conserved by the abdominal than by the perineal method on account of the extent of the incision and the risk of injury to the nerves in the latter operation.

If the lower limit of the growth is three inches or more from the anus, the gut can be divided below the growth through the abdominal incision and the operation completed without a perineal wound other than a stab drainage opening. For low growths involving the anal canal so that the sphincter has to be sacrificed the combined abdominoperineal operation is indicated with the formation of an inguinal anus at the time of operation.

The ordinary low ampullary growths, when small, call for the perineal operation for both sexes; in the case of the larger growths in women, and in some men, when there is a decided doubt as to its extent, the combined method. In women the combined method can be readily carried out by the help of an incision through the posterior vaginal wall, which causes little injury to the sphincter. Blake in his operations on this class of cases usually excises partially

the mucosa from the anal canal and brings the bowel down through the sphincter thus denuded.

For the higher growths, lying about three inches from the anus, or for those cases in which the bowel can be divided below the growth through an abdominal incision, he prefers the abdominal method and the invagination of the upper segment through the lower with suture within the abdomen or without the anus by a modification of the method used by Maunsell and Weir. As before said, the only perineal wound made in this operation is a stab drainage opening, situated far back along-side the coccyx, to drain the hollow of the sacrum; the abdominal wound being closed without drainage.

Blake alludes to an ingenious method of anastomosis devised by Auchincloss for the anastomosis of the oral with the aboral segment in this operation. So far the method has not been used upon the living patient, but he has proved its practicability upon the cadaver.

#### TREATMENT OF SCOLIOSIS.

ROTH (British Medical Journal, Sept. 2, 1911) concludes from a study of cases that scoliosis is a disease of females-843 females, 157 males. Scoliosis is a disease of adolescence-86 per cent between six and twenty years. The frequent occurrence of scoliosis in members of the same family points to hereditary transmission. The bad position assumed in writing, a delicate constitution, and too rapid growth are largely responsible for very many cases. Difference in the length of the legs is not a common cause of scoliosis. Pain is a frequent symptom. Flatfoot is a very frequent complication. Attention to dress before any treatment is absolutely essential. Treatment should never be commenced until a record of the osseous deformity has been made.

Treatment by "posture and exercise" entirely arrests the increase of bony deformity in all but 5.5 per cent of observed cases, and in 3.3 per cent slightly decreases it.

In 83 per cent of cases a permanent practical cure is brought about.

The treatment employed in these cases is as follows: Attention to dress, daily systematic training for from one to three months of the spinal and other muscles, including the development of the thorax. Reëducation of the patient's muscular sense as to an erect or improved position; improved position to be maintained at all times, whether sitting or standing. Attention to general health. Subsequent home treatment to prevent relapse from the improvement or cure that has been obtained by the surgeon.

# A BRIEF ANALYSIS OF FORTY CON-SECUTIVE CASES OF PLA-CENTA PREVIA.

EDGAR (American Journal of Obstetrics and Diseases of Women and Children, July, 1911) states that the cases he records constitute the first forty instances of placenta previa treated in the Manhattan Maternity, during the period from February, 1905, to February, 1911.

The terms central, partial, and marginal have been applied to the conditions only after complete dilatation or complete dilatability of the os.

Of the 40 cases 15 occurred and were treated in the outdoor service; six were found among the tenement-house cases and transferred into the hospital; two were treated in their own homes; and seventeen were ambulance or emergency cases.

There were ten cases of central, nine of partial, and twenty-one of marginal placenta previa. The hemorrhage occurred at the fifth lunar month in one case, at the sixth in two, at the seventh in six, at the eighth in twelve, at the ninth in five, and at the tenth in fourteen cases.

In seventeen instances the hospital was called to or received the case immediately after the first sign of hemorrhage. In nine cases the hemorrhage persisted for a few hours, several days in five instances, several weeks in six, and several months in three. Of the forty cases ten had the vagina

packed with gauze to control the hemorrhage before being received by the hospital. Seven were examined by the ambulance or other physician prior to admission. Twentythree cases were exclusively treated by the hospital from the onset of the bleeding.

The general line of treatment in these forty cases consisted in controlling the hemorrhage and securing cervical dilatation by means of cervical and vaginal gauze packing. Completing dilatation by means of bimanual cervical dilatation, the Pomeroy hydrostatic bag, or the modified de Ribes bag. Completing delivery by version and breech extraction, the forceps, simple breech extraction, or spontaneously. The postpartum packing of the uterus to prevent further bleeding, and the use of hypodermoclysis, rectal and venous infusion, or other shock treatment. The induction of labor.

In no instance was it considered that vaginal or abdominal Cæsarian section was called for.

Cervical and vaginal gauze packing was used in thirty-two of the forty cases, as a hemostatic and cervical dilator. In four instances the packing was applied twice; in two, three times; and in one case repacking was used to control the oozing over a period of forty-eight hours. In sixteen of thirty-two cases (50 per cent) the packing alone was sufficient for causing dilatation. In the remaining sixteen subsequent means of dilatation were called for. One died undilated.

The modified de Ribes hydrostatic bags have not been popular in hospital service for placenta previa, and in only three instances was this method to control hemorrhage and secure dilatation used, namely, a marginal one and in two partial cases.

The disfavor in which the modified de Ribes bags was held was founded on the belief that in central and some partial cases an unnecessarily early placental separation was caused, with subsequent internal concealed hemorrhage, and also with high fetal mortality.

On the other hand, the Pomeroy hydrostatic bag was employed in seven instances.

These included three central, three partial, and one marginal. The Pomeroy bag, not entering the lower uterine segment to the extent that the de Ribes bag does, has not the objectionable features of the latter.

Rapid bimanual dilatation of the cervix was employed in twelve instances, but in only two cases as a primary measure, the remaining ten having been subjected to a preliminary gauze packing.

Version to complete labor was resorted to in twenty of the cases, and was followed by immediate breech extraction.

The forceps for the same purpose was brought into use in six cases.

Breech extraction in breech presentation was performed in five cases.

The postpartum packing of the uterus as a preventive of further bleeding was and is a routine measure of the hospital in placenta previa cases.

The author considered it necessary in the forty cases to induce labor in nine instances, namely, one at the sixth month, five at the seventh, two at the eighth, and one at term. The means employed was cervical and vaginal gauze packing in four, the Pomeroy bag in three, and the modified de Ribes bag in two cases.

Spontaneous delivery was permitted to end the labor in eight instances. It is of interest to note that all of these were of the marginal variety of placenta previa. Seven of these eight cases were first packed; one only had no treatment.

Of the mothers, three died, a maternal mortality of 7.5 per cent.

The first of these cases was a woman, aged twenty-seven, ii-para, eight months pregnant, partial variety of placenta previa, and was received by the hospital from an ambulance in profound shock, the vagina packed with gauze and the cervix thick and one and a half fingers dilated. In spite of the usual shock treatment, the patient died two hours after admission undelivered.

The cervix and vagina were repacked after admission, the hemorrhage being controlled, but the extreme shock did not warrant Cæsarian or other attempt at delivery.

The second, an alcoholic, died on the

fifth day from double lobar pneumonia. A third was brought to the hospital profoundly exsanguinated. Under ether the cervix was thoroughly dilated, and in one hour, by Nos. 3 and 4 Pomeroy bags. Version and breech extraction was then performed. Shock was treated by venous infusion and other means. A profuse postpartum hemorrhage followed and the patient died.

Of 41 children, there being a twin pregnancy, 15 were stillborn, and six of those born living died within twenty-four hours of delivery.

Fry, writing on the same subject, has collected 161 cases, with five maternal deaths, and alludes to Holmes's previous report of 1029 cases treated by eleven operators, with a mortality of 3.3 per cent. Fry's personal experience embraces 38 cases, one terminat-Fry holds that the safest ing fatally. method of delivering a woman suffering from placenta previa is purely an obstetric problem, and its decision should rest with obstetricians. Experience clearly demonstrates that maternal interests are guarded best by evacuation of the uterus as soon as diagnosis is made. Large dilatation of the cervix has no place in the treatment of placenta previa. Version by the podalic method is never advisable unless uterine action has softened and dilated the cervix sufficiently to insert the hand. Slow delivery of the infant should be substituted for extraction. Extraction implies the use of active measures, a "vis a fronte." whereas the birth of the infant should be mainly by uterine force, a "vis a tergo."

Hemorrhage being unavoidable and incidental to dilatation of the cervix, the method requiring the least degree of dilatation necessary to perform version will naturally be expected to give the least hemorrhage, and after dilatation has been obtained in sufficient degree to allow the insertion of one or two fingers further continuation of the process is likely to endanger the integrity of the soft parts. In other words, the artificial dilatation sufficient to perform bipolar version is comparatively safe, while that necessary for the insertion

of the hand and podalic version is dangerous.

After version has been accomplished the leg, breech, and body of the infant successively plug the cervical opening, and by pressure against the area of uteroplacental detachment prevent the further loss of blood. Bleeding being absolutely under control every effort should be made by slow delivery to secure dilatation and thereby prevent laceration of the lower uterine segment. Too often, in the delusive hope of saving the life of the infant, is that of the mother further endangered by active efforts at extraction.

Anesthesia should be discontinued after having performed version, and uterine action should be hastened by directing an assistant to rub the fundus of the uterus, and by encouraging the patient to make use of her auxiliary muscles to supplement the uterine force. In multiparæ the average duration of labor under these circumstances is one hour or one hour and a half.

The temptation to assist the birth of the infant by active efforts at extraction must be set aside in the interests of the mother. Danger is not over with the successful termination of labor. Hemorrhage after birth of the infant is due to placental adhesion, uterine inertia, and laceration of the lower segment of the uterus. When due to adhesion the indication is to detach manually and remove the placenta. retractile power of the lower uterine segment is deficient and adds greatly to the danger of postpartum hemorrhage when the placenta is previa. Proper application of the intrauterine tampon of sterile gauze is a most valuable agent in safeguarding the patient from the disastrous consequences of further loss of blood.

Regarding the indications for abdominal Cæsarian section, this operation is advisable in central placenta previa complicated by an undilated cervical canal. Not only must the cervix be undilated, but the tissue must be hard and unprepared for artificial dilatation. This condition exists only in about five per cent of all cases of placenta previa and is almost never met with in multiparæ.

Contraindications for abdominal Cæsarian section in placenta previa are, first, excessive loss of blood before the opportunity arises for performing the operation; secondly, a soft and dilatable cervix; and thirdly, a partial or marginal variety of placenta previa.

Previous attempts to dilate and deliver the case by the natural passages, the use of gauze tampons and rubber bags to control hemorrhage, place such cases on the undesirable list, and if subjected to surgical skill the Porro operation should be substituted for Cæsarian section.

#### THE ORIGIN AND TREATMENT OF PER-FORATING ULCER OF THE FOOT.

HOFMANN (Beiträge zur klinischen Chirurgie, Bd. 73, Heft 1) reports upon 15 cases of perforating ulcer of the foot which he observed during the space of three years. in the Southern Tyrol. All of the cases were in males and all but one over forty years of age, three being over sixty; all were in the laboring class, and for the most part were heavy wine drinkers. All of the cases were examined by a nerve specialist for tabes, syringomyelia, or other spinal or peripheral nerve disease such as is usually considered responsible for perforating ulcer. In only one case in which there was tabes was any organic nerve lesion discovered. The only factor of etiological moment was chronic alcoholism in the form of wine drinking, combined with heavy manual labor in older males.

In the 15 patients there were altogether 29 ulcers. In only five cases was the ulceration confined to one foot. Fourteen of the ulcers were located upon the plantar surface of the great toe, seven upon the ball of the great toe, seven on the ball of the little toe, and one on the heel.

In all 15 cases the treatment was surgical. As there was found in most cases a fistula leading from the floor of the ulcer into the joint cavity, it was necessary to disarticulate the toe at the affected joint, and in those cases in which the head of the metatarsal bone was diseased, to resect the

diseased portion of this bone. In cases in which there was no communication with the joint simple excision of the ulcer was sufficient. In the author's cases the results were especially favorable. In three cases there was severe infection combined with an open joint finally leading to gangrene of the toe. In two of these cases death resulted.

# THE FOERSTER OPERATION FOR GASTRIC CRISES.

GULEKE (Archiv für klinische Chirurgie, Bd. 95, Heft 3) reports from Madelung's clinic five cases of operation upon the spinal nerve roots according to the method of Foerster for gastric crises. The first patient complained after the operation of pain lower in the abdomen which required morphine to control it. He died two months after the operation from pulmonary tuberculosis. The second patient, in whom the seventh to the tenth dorsal roots were resected, was relieved of the pain and vomiting, but died four days after the operation from bilateral lower lobe pneumonia. The third patient, in whom the seventh to the ninth roots were resected, was very much improved at first, but after three months again suffered from regular morning attacks of pain and vomiting, the pain being located lower down in the abdomen. The patient again took to the use of morphine. In the fourth patient the seventh to the ninth roots were resected, with immediate cessation of the gastric crises, but after three weeks severe intestinal crises appeared. Seven and a half weeks after the first operation the tenth and eleventh dorsal roots were resected, with relief for three weeks, when new attacks, which were, however, considered to be psychic. developed. In the fifth patient the seventh to the ninth roots were resected, and although the patient was in a psychopathic state, he appeared to be very much relieved.

On the basis of this experience there is no doubt that the Foerster operation is a justifiable procedure in gastric crises, but one is not warranted in offering a very hopeful prognosis, partly because of the underlying disease itself and partly because of the chronic morphine intoxication which has been developed in all these cases before operation is attempted. Better results would be attained if the operation could be performed before the morphine habit had been developed. A further justification for early operation is offered by the fact that extradural resection of the nerve roots is accompanied by very little danger. Further study should be made in reference to the indications for operation dependent upon whether the crises are those of the vagus or those of the sympathetic system, as only those of the latter origin are amenable to treatment by root resection.

# PARTIAL RESECTION OF THE KIDNEY ON ACCOUNT OF AN EPITHELIAL TUMOR.

FABRICIUS (Deutsche Zeitschrift für Chirurgie, Bd. 110, H. 4-6) cites from the literature eleven cases of partial resection of the kidney. He also reports a case of his own, the first of its kind, of partial resection of the kidney for a cystic epithelial tumor. The character of the tumor was determined by microscopic examination. It is three and a half years since operation, and the patient appears to be entirely well, with the exception of arteriosclerosis with which he is afflicted. The urine remains normal.

#### SALVARSAN.

WOLBARST (New York Medical Journal, Sept. 23, 1911) contributes an article on this subject as follows:

Of fifty cases, studied clinically for periods varying from three to ten months (an average of 6.4 months), after a single injection, twenty-seven (54 per cent) may be considered clinically "cured;" ten (20 per cent) improved materially, and have not yet suffered recurrence; ten (20 per cent) improved, but developed clinical recurrence later; three (6 per cent) showed no change as a result of the treatment.

When clinical recurrence took place it

occurred most frequently in the first three months after treatment. Evidently one injection was not sufficient to produce the desired result. One case recurred after seven months, and one after eight months. Repetitions of the treatment should be given within one month, to insure the best results.

The Wassermann reaction remained positive in 33 per cent of the cases, and became negative and remained so in 30 per cent for periods averaging four to five months.

In the cases considered "cured," the reaction became negative in 41 per cent, and remained positive in 30 per cent; in the cases which improved without recurrence, 40 per cent became negative and 20 per cent remained positive; of the cases improved, with recurrence, 30 per cent became negative and 50 per cent remained positive. This showed that the Wassermann reaction is more likely to change from positive to negative in cases which also respond clinically to the influence of the remedy than in cases which do not show this favorable result.

The positive reaction is apt to remain uninfluenced in cases in which clinical recurrence takes place.

In the primary cases the reaction became negative in 33 per cent, and remained positive in 50 per cent of the cases; in the secondary cases the reaction became negative in 50 per cent, and remained positive in 36 per cent; in the tertiary cases the reaction became negative in 15 per cent and remained positive in 22; in the parasyphilitic cases the reaction became negative in 50 per cent and remained positive in 40 per cent.

The therapeutic effect of a single injection of salvarsan is equivalent in potency to a course of mercury and iodides, in a large proportion of cases. This is particularly true in primary cases and in cases which have not responded previously to vigorous treatment with mercury and iodides. We have in this new remedy the most powerful and trustworthy medium for the conquest of syphilis that has ever been known. It will not entirely supplant mer-

cury and iodides, but it will undoubtedly take their places as the foremost remedy at our command. We are still in ignorance of the best method of using salvarsan; we do not know the maximum curative dose, nor do we yet know the best method, nor how often it should be repeated. All of this information will come to us within a reasonable time, and we shall then be better able to judge of its permanent value. Of one thing we may feel certain, namely, that salvarsan has come to stay, and that it will certainly play the principal rôle in the conquest of syphilis.

#### A NEW CONSERVATIVE TREATMENT OF PROLAPSE OF THE RECTUM.

BAUER (Beiträge zur klinischen Chirurgie, Bd. 75. H. 1 and 2) says that the etiology of prolapse of the rectum depends upon three factors, namely, the lowered position of the fold of Douglas, insufficiency of the floor of the pelvis, and insufficiency of the supporting apparatus of the intestine. It is self-evident that anything which increases intra-abdominal pressure, such as obstipation, diarrhea, cough, phimosis, or stone in the bladder, will excite this condition. A review of the various methods of treatment of rectal prolapse shows that we do not possess any ideal method of treating this condition. There is described a new and simple method which renders the posterior and lower part of the rectum devoid of proper support because of improper development of the lower part of the sacrum. In the two cases of rectal prolapse the prolapse could be prevented upon attempts of the patient to bring it about by making pressure upward and forward just below the coccyx.' This led him to the construction of a celluloid corset modeled upon a plaster cast to encircle the upper part of the hips and the lower part of the abdomen. To the back part of this bandage is fastened a spring, upon the lower end of which is carried a rubber pad intended to make pressure upward and forward just below the coccyx as had been done by the finger in the experimental. cases. This apparatus was used on six cases of rectal prolapse in children with perfect retention of the prolapse from the beginning. After using the apparatus from fourteen days to several weeks five of the children were completely cured. The sixth child lived at a distance, and the apparatus was not properly managed, which condition, combined with the presence of an unusually relaxed sphincter, was sufficient to account for the failure to cure.

# THE PRESENT POSITION OF THE CLEFT-PALATE CONTROVERSY.

GOYDER (Practitioner, September, 1911) notes that until the advocates of the flap operation can produce complete and consecutive reports of their cases, showing the immediate and remote mortality of their operations and the effect on speech, the controversy is at an end. tious operators by the flap methods must reconsider their position, and unless they can prove that their results are equally good, must alter their methods of operation. The present writer believes that these statistics will be produced, not perhaps by the pioneers of the movement, but by their youthful disciples, whose cases, operated on in infancy, are not yet of an age to talk well enough to furnish accurate records.

Arguments for and against the operation in infancy and for and against the flap method are practically inseparable, because though the flap operation can be done at all periods of life, the median one is inapplicable in infancy for wide and complete clefts, unless some such preliminary operation as Brophy's is performed, which in English hands has a mortality so high as to render it unjustifiable. The question resolves itself into, shall we operate in the first year of life, when a flap operation is probably the only one available, or, operating later, shall we adopt a median or a flap method?

The advantages claimed for early operation are:

That it is a life-saving procedure. The

only evidence in favor of this assertion is that certain cases awaiting admission to hospital for early operation die before they can be admitted. This, however, does not prove the point, even though it is urged that most "cleft-palate babies" are healthy at birth. Most of these infants begin to thrive as soon as the mother is taught how to feed them; and those who do not thrive are not fit subjects for operation. tics are required of the percentage of babies with cleft palate, including the extent and character of the cleft, who die during the first year of life, and the percentage of "cleft-palate children" who succumb after early operation—in other words, the remote as well as the immediate mortality of the operation. The advocates of early operation alone can furnish this. Without these figures their claim is untenable, and at the present time the figures available are strongly against it.

That it results in an immediate improvement in nutrition. To the truth of this the writer can testify. None of his cases have lost more than a few ounces in weight in the three or four weeks following operation, and the subsequent increase has been in many cases astonishing. In one case in which, owing to malnutrition, operation was delayed until the tenth month, the subsequent great increase was possibly that which is so often found in congenital syphilis at or about the completion of the first year. The argument as to improved nutrition is not very strong. It must be remembered that an infant after a cleft-palate operation cannot be taught to suck, and its feeding requires almost as much time and patience as before operation. Besides, it cannot be proved that the increase in weight would not have occurred in any case.

That on theoretical grounds the earlier the malformation is corrected the greater chance is there of a proper development of the nasal cavities, and the establishment of proper breathing, and subsequently of proper speech. The writer has had one case of cleft of the soft and part of the hard palate, the remainder of which was very highly arched, in which descent of the uncleft portion of the palatine arch followed closure of the cleft. Apart from this the assertion must be regarded as absolutely non-proven.

That there is less liability to Eustachian and middle-ear infection. This may be true, but the liability is still there and appears to be at least as great as before operation.

That habits of faulty articulation are prevented, and that therefore the speech is likely to be better than it is after later operation. This may or may not be true. It is the crux of the whole matter. There is at the present time absolutely no evidence in favor of it, and until complete and consecutive records are published and patients exhibited, the advocates of early operation have hardly a leg to stand upon. In this connection it has been assumed that since operations in younger children produce, as a rule, better results as regards speech than they do in older ones, therefore operations in infancy would show results better than in young children. this does not follow, and there are so many exceptions to the first statement that it is of no value as a basis for reasoning.

Criticisms leveled against the operation are the immediate and remote high mortality and the absence of compensating advantages.

As to the adoption of the median operation it is pointed out that neither is as a rule performed well. The flap operation is adapted for closing the cleft at any age. If capably performed it is almost independent of sepsis and of postoperative mishaps. It is strong where the median one is weak, namely, at the junction of the hard and soft palate, the palate never giving way here. The objections leveled against this operation are that it produces an unsightly result; that it shortens the soft palate; that it closes the hard palate at the expense of the soft palate, the inevitable cicatrization of the raw surfaces producing a stiff and immobile velum. There is a tendency for the flaps to give way or to ulcerate after the patient has been discharged as cured. The palates after flap operations are often so thin that they look as if a pin thrust through them would cause the whole palate to burst like a bubble. There is a possibility of failure of healing with necrosis of the jaw. The exposed temporary teeth are shed early. The inevitable consequences in summing up these pros and cons are that until the advocates of the flap operations produce a consecutive series of cases as complete as those of Mr. Berry their opinions can have no weight, and their position is untenable.

Unless the results as regards speech are as good as those of the majority of the median operations, flap methods will have to be abolished or remodeled.

Unless the mortality of the operation in infancy is lowered early operation will have to be abandoned.

These are the views of an advocate of the flap operation, who believe there is still a great deal to be said for it. In all probability the matter will end in the compromise so dear to the English mind. The advocates of early operation will operate later, the others possibly rather earlier. An operation with flaps for the hard and median suture for the soft palate is not beyond human ingenuity. And, if the candor and honest dealing of the one side is not met by the long-withheld statistics of the other, the flap operation will thoroughly deserve its fall into disrepute.

### SURGICAL TREATMENT OF PERIPH-ERAL FACIAL PALSY.

EDEN (Beiträge zur klinischen Chirurgie, Band 73, Heft 1), after calling attention to the uniformly poor results of the various nerve anastomoses in case of peripheral facial palsy, describes a plastic muscle operation which he has performed in one case with very satisfatcory results:

An incision was made at the nasolabial fold through the skin and subcutis. It was made at this location rather than at the border of the masseter for cosmetic reasons. From this incision the tissues were slowly and carefully dissected back as far as the anterior border of the parotid gland,

which was in turn raised up so as to expose the anterior border of the masseter at its attachment to the lower jaw. This attachment was separated from the bone for a distance of one centimeter and the anterior border of the masseter dissected upward in the direction of its fibers for a distance of two centimeters. The portion of muscle thus separated was split at its free end for a distance of one centimeter and the divided end carried forward under the skin and subcutis in advance of the skin incision, and one fork sutured above and the other below the angle of the mouth. The skin incision was then closed with fine silk. In dealing with the lid palsy an incision was made over the temporal muscle just above the hair line and parallel to it. The temporal muscle was exposed and a small flap with its base upward separated. This flap was carried forward to the angle of the eye, to which point it was sutured with silk.

Immediately after the operation the corner of the mouth was drawn up as in laughing, but after six weeks it had assumed the normal position of rest. Also at this time the action of the affected corner of the mouth was symmetrical with the sound side in the act of laughing. The palpebral fissure on the paralyzed side was considerably reduced after the operation, and in attempts to close the eye the edges of the lids could be brought within one millimeter of each other. The advantages of this operation over nerve grafting are that the results are much better and much more quickly obtained.

### THE IDEAL OPERATION FOR ARTE-RIAL ANEURISM.

OMI (Deutsche Zeitschrift für Chirurgie, Bd. 110, Heft 4-6) states that there is no doubt that the ideal operation for aneurism consists in extirpation of the sac, and instead of ligation of the artery, to maintain the normal circulation by means of vessel suture. Hitherto there have been five successful operations for aneurism by this method in addition to 25 cases of circular

suture of the artery for other indications. To these five cases the author adds a sixth. The patient was a man thirty-three years old, affected with syphilis, who during two years prior to the operation suffered from aneurism in the left popliteal space. The operation consisted in extirpation of the sac, which involved the removal of about 4 centimeters of the popliteal artery. The ends of the artery were brought together and sutured by means of the circular method of Carrel and Stich. The posterior tibial and the dorsal artery both pulsated immediately after the operation and the entire extremity was warm. The leg was dressed with the knee flexed at an angle of 100°. The patient was able ninety-three days after the operation to walk without difficulty, and a few days later to assume his full duties as a public official.

# SURGICAL CONSIDERATION OF CAR-CINOMA OF THE STOMACH.

ERDMANN (New York Medical Journal, Oct. 7, 1911) on the basis of a rather extensive experience with the x-ray, excellently illustrated, holds that the following conclusions seem justifiable: First, the retention of bismuth, given according to his method for a period over four hours, signifies a pathological condition other than mere displacement; secondly, the absence of the bismuth shadow from the stomach area, excepting in small isolated spots, is not due to stenosis or simple dilatation but to ulcer.

While he believes that a distinct advance has been made in ulcer diagnosis, that a valuable sign has been developed which, when present, will justify us in carrying out our treatment with assurance in otherwise doubtful cases, still he feels that the x-ray examination should not as yet be looked upon as giving by itself a final verdict, but rather should bear weighty evidence when taken in conjunction with the other clinical data.

The x-ray examination having shown a definite ulcer shadow before treatment is instituted, its persistence or absence in later

radiographs after the treatment should be an index of the result of such treatment. Some work has been done on this line, but our experience is too immature to report data of value.

# SOME POINTS IN THE CURE OF INGUINAL HERNIA.

Lucy (Canadian Medical Journal, October, 1911) has ingeniously collated from many sources certain points which have been serviceable to him and are likely to be so to others in the operation for the radical cure of hernia. He commends the curved incision of the skin, beginning nearly one inch external to the middle of Poupart's ligament, curving up on the abdomen, and ending at the pectineal eminence, as the resulting scar-line is out of the way of a truss, should wearing one again become necessary.

This flap, dissected down to the external oblique and turned down, gives good access to the subsequent steps.

The opening of the canal, recognizing the lower end of the sac by its white line, freeing and opening the sac and reducing any contents, are all done as usual.

Kocher's disposal of the sac is commended. It is thus done: Grasp the fundus of the emptied sac with curved forceps, invaginating the sac into itself like the finger of a glove, through the canal into the peritoneal cavity; keep the ends of forceps close against the abdominal wall, and project their points out through a small incision one inch external to the angle of the wound, retracting the skin to avoid the necessity of cutting it; draw the sac taut; tie at the neck; cut off and drop the stump back into the wound. Or, if unable to invaginate the sac, pass the forceps, grasping the sac external to the peritoneum, and similarly through the abdominal wall. If desired, the sac may be tied off high up first before grasping it with the forceps, and the stump transfixed by the stitch closing the abdominal incision.

Reiss says Kocher's disposal of the sac is the main point in the cure; that when this is done the inguinal canal may be closed with No. 1 catgut safely.

Goldspohn's method of placing two heavy clamp forceps on Poupart's ligament, letting them fall flat on the thigh, is serviceable. This faces the internal surface of Poupart's ligament up, greatly facilitating sewing the oblique and transversalis fascia to its lower internal surface.

Bassini's closure. In sewing the internal oblique and transversalis fascia to Poupart's ligament, the first stitch includes the edge of the rectus muscle, uniting it to Poupart's ligament. Four to six stitches complete this row of sutures. The cord is carried to the outer angle of the wound.

If thought advisable, one stitch may be placed external to the cord, which lies in its natural position.

Remove the forceps, allowing Poupart's ligament to resume its natural vertical position. Then, beginning at the outer angle, sew the external oblique to the upper edge of Poupart's ligament down to where the cord and vessels emerge at the pubic bone.

In closing the skin-flap, adjust it carefully, insert a few buried catgut sutures to prevent pocketing, and begin the surface sutures in the center of the flap to prevent puckering.

Applying a two-per-cent cocaine solution carefully to the patient's nostrils a few minutes before giving ether abolishes the sense of smell. The patients go to sleep quicker, not being annoyed by the pungency of the ether.

The author has used this plan in 47 cases, with one recurrence, in a child of sixteen months, operated on for strangulated hernia. The ages of the patients varied from five weeks to seventy-four years.

Finer grades of Marcy's kangaroo tendon are preferred for the deep layers.

Judd, reporting from the Mayos' clinic, says: "The strength of closure depends almost entirely on the internal oblique, being the only structure here with good blood and nerve supply." He reports over 1650 cases, with practically only one per cent of recurrences. If the internal oblique looks weak, he takes in the aponeurosis of the external

oblique in the first row of stitches, to strengthen the internal oblique, thus displacing the cord external to this part of the external oblique.

Kocher, on the other hand, says: "Suture of the deep layers, internal oblique, and transversalis to Poupart's ligament is not necessary for the cure of ordinary inguinal hernia." He attributes his success largely to the use of silk sutures, reporting practically 4 per cent of recurrences. Kocher says Bassini's closure shows 5 per cent of recurrences.

#### RESIDUAL URINE IN OLD MEN.

MILLER (Practitioner, September, 1911) writes on the basis of a personal experience an entertaining paper, which has for its lesson the fact that old men pass water frequently, and get up at night to do so because they are too lazy or indifferent to fully empty their bladder at each act of micturition. He explains with singular perspicacity that residual urine is the result of not emptying the bladder thoroughly; nor is it merely obstruction that causes residual urine-it is a failure to empty the bladder, due to insufficient effort being made. He believes that the urine can be gotten rid of if an effort is made to pass it. and that the bladder can be trained to thoroughly and systematically empty itself at each act of micturition, and the man thus saved from "catheter life."

While on first reading this article may seem rather amusing, there is a large element of sound common sense in it. One of the most striking demonstrations of the effect of training the bladder in regard to its function was afforded by the late Dr. Samuel Alexander, who by this means, supplemented often, but not always, by surgical intervention, was able to cure inveterate cases of hyperfrequency or incontinence. Moreover, every surgeon of experience realizes that if a patient with residual urine makes gentle but repeated efforts to empty the bladder night and morning, both his days and his nights will be more comfortable. Indeed, many of the prostatics state that the morning is their best time, and on investigation it will be found that in the course of dressing and shaving they have perhaps made five or six efforts at emptying the bladder, these being much more successful than a single forced, hurried effort.

## AN EXPERIMENTAL COMPARISON BE-TWEEN "606" AND IODIDE OF MER-CURY AS ANTISYPHILITICS.

McIntosh and Fildes (Lancet, Sept. 30, 1911) consider for experimental purposes testicular infection in rabbits much more applicable than lesions produced on monkeys. They state that positive inoculations are readily obtained in the skin of the scrotum or by injecting deeply into the Some disadvantage is, however, testis. found in the fact that in the rabbit the disease is practically local and liable to spontaneous cure. No generalized symptoms are observed, only the virus is demonstrable in the internal organs by means of inoculations of these organs into other animals. They followed the effect of medication upon the spirochætæ by means of a method of dark-ground illumination, and noted that after injection of salvarsan the destruction of the microörganisms began about three hours after the injection and reached its maximum four to five hours after, being complete in seven hours. They observed that in man the corresponding figure was nine hours after adequate treatment. Within two hours of injection pain over the lesion disappeared, since the animal no longer winced under the frequent examinations. In six hours the ulcer had shrunk so much that the scab appeared relatively too large. In the course of healing, chancres on control rabbits remained unaltered. In eight weeks the Wassermann reaction showed a marked quantitative diminution in strength. Owing to a frequent occurrence of this reaction in normal rabbits the final result may perhaps be taken as negative.

Mercury was given intravenously in the form of the iodide, this salt being most suited for the purpose. The effect on the spirochætæ was found to be much less after two injections than after one injection of "606." No alteration was found twenty-four hours after the first injection, while even four days after a few spirochætæ were found. On the fifth day, however, no organisms were detectable.

The local effect was also much slower. As a comparison of the effects obtained between "606" and mercury it may be roughly assumed that the amount of "606" represented one-sixth of an adult human dose, while the amount of mercury represented three adult human doses.

As to the iodide of potassium no effect on the spirochætæ was observed and no alteration in the size of the lesion.

## OBSTINATE PRURITUS CURED BY EX-CISION OF THE EXTERNAL OR-GANS OF GENERATION.

COLE (New Orleans Medical and Surgical Journal, October, 1911) treated a case of obstinate pruritus by removal of the clitoris, the labia minora, and a part of the vestibule and labia majora, with immediate relief of symptoms. The case is reported four months after this radical procedure. In the particular case which he records the etiology is obscure. The general itching had lasted for three years with periodical exacerbations not particularly severe. The attacks grew more frequent, and six months immediately preceding operation the itching was almost constant and was intolerable, causing loss of sleep and a condition of profound despondency. Medical treatment and curettement had been perfectly futile.

#### THE PRESENT STATUS OF THE OP-ERATION FOR HYPOSPADIAS.

BECK (Medical Record, Oct. 7, 1911) again proclaims that his operation for hypospadias is a successful one and can be made use of in the great majority of cases. It is stated that in the adult, where the extensibility of the urethra is a little over two inches, all cases in which the false opening is located within one inch of the tip of the glans penis are curable by the dislocation method. The ideal case for operation is one of the balanic type. The patient is

placed in deep narcosis to assure thorough laxity of the organ and prevent possible erection of the penis. The entire penis is sponged off with alcohol and then coated with tincture of iodine. Cotton gloves on the hands of the operator facilitate handling the organ and prevent slipping. An assistant grasps the glans very firmly with two fingers and exerts moderate traction, so that the false opening becomes as prominent and as large as possible. A thin rubber catheter is introduced to act as a guide while the process of dissection is going on. The catheter is easily felt by the operator through the very thin skin overlying it.

The incision is made parallel to the urethra and to one side of it so as to create a small flap with which to lift the urethra up and out. Care must be taken, since the smallest puncture of the urethra means a fistula which may remain permanent. It is important to dissect out a sufficient length of urethra so as not to cause too much tension when a dislocation forward has taken place. About two inches is the average.

For creating a new channel in the glans a bistoury is serviceable. This is turned to the right and left to make the openings sufficiently large. There is always some contraction later on, and this must be thought of at the time of operation. Four thin silk sutures are run through the anterior opening of the urethra equally distant from one another. The ends are drawn through the new channel in the glans, and using the silk threads as a handle the urethra is pulled forward into its natural position. The sutures are rethreaded on a needle and the urethra is stitched to the circumference of the freshly created meatus. One of the ends may be left long and run through or around the catheter to keep it from sliding either in or out. The wound in the body of the penis is sewed up with fine catgut, a thin strip of sterile gauze placed over it, and the whole encased in an adhesive or collodion dressing. patient is kept on large doses of potassium bromide and a bland diet to prevent erections, which will destroy the fruits of the operation. If nothing interferes with primary union the catheter may be removed after the fifth day and the stitches about the tenth. In the penile type the tension placed upon the urethra has always caused incurvation, if not when lax, at least when the penis was erect. One case of scrotal hypospadias required two operations—the first one the dislocation of the urethra as far forward as possible, and the second the formation of Thiersch flaps. Approximately 80 per cent of the cases seen are in children of the Jewish faith.

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Text-book of Ophthalmology. By Dr. Ernst Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized from the twelfth revised and greatly enlarged German edition, with numerous additions by Alexander Duane, M.D., Surgeon Ophthalmic and Aural Institute, New York. With 441 illustrations. Fourth edition. Philadelphia and London: J. B. Lippincott Company, 1911.

The Text-book of Ophthalmology by Dr. Ernst Fuchs is the most important, satisfactory, and scholarly single volume on this subject in any land. It has been so long and so favorably known that it is unnecessary in this notice to do more than call attention to the fourth edition of an authorized translation, with many additions, by Dr. Alexander Duane, and to congratulate the American translator and commentator on the characteristically admirable work which he has performed. One cannot read Dr. Fuchs's book without a perfect consciousness that each line has been written by a master, whether the text refers to pathological considerations, clinical details, therapeutics, or operative procedures, and it is no criticism of Dr. Fuchs's individual work to say that the additions of Dr. Duane have greatly enhanced the value of the book. In the twelfth edition, from which this translation has been made. Dr. Fuchs has incorporated an entirely new portion which deals with a general introduction to the work, and as the translator himself says, constitutes an eminently clear and comprehensive description of the general physiology of the eye, and the pathology, etiology, symptomatology, and treatment of eye diseases as a whole. No one interested in ophthalmic diseases and their treatment can afford to be without this book, or afford to be unfamiliar with its lucid and informing contents. G. E. DE S.

SUSHRUTA SAMHITA. An English Translation Based on Original Sanskrit Text. Edited and Published by Kaviraj Kunja Lal Bhishagratna. With Plates in Three Volumes. Volume I, Sitrasthanam, Calcutta, 1907.

Although the title-page of this book shows that it was published in 1907, it has just been received for review in the THER-APEUTIC GAZETTE. The translator points out that few of his countrymen, and fewer still of the Western world, have any access to the vast medical literature of ancient India, and therefore are unable to form an independent opinion of the principles of the science of life and cure that underlie these works of ancient wisdom. He is perfectly convinced that there is much of great value in these pages, and points out that the English language has been selected as the medium of translation because it has now become the lingua franca of the world. Naturally, the book possesses much more interest to the medical historian than to the active practitioner. The second volume is just coming off the presses, and the manuscript of the third volume is ready for the printer. As an illustration of the character of the text we find the following under the title of authoritative verses on the subject of suppuration: "As a blazing fire fed by gusts of favorable wind soon consumes a withered forest, so the incarcerated pus in the absence of any outlet attacks and eats away the healthy flesh, veins, and nerves of an organism." The latter part of the book, in which many recipes are given, calls for drugs which are entirely unknown in this country in a large majority of instances, but there are some substances common to both continents. as, for example, the milk of the ewe, the

milk of the she-buffalo, the milk of the mare, the milk of the woman, and the milk of the she-elephant. The latter is said to be spermatopoietic, and to invigorate the eyesight.

PAIN: ITS CAUSATION AND DIAGNOSTIC SIGNIFI-CANCE IN INTERNAL DISEASES. By Dr. Rudolf Schmidt. Translated and Edited from the Second and Enlarged German Edition by Karl M. Vogel, M.D., and Hans Zinsser, A.M., M.D. Second Edition. The J. B. Lippincott Company, Philadelphia, 1911. Price \$3.00.

The recollection that pain is always a symptom and never a disease brings to mind the second fact that it is often a most important diagnostic manifestation which, if carefully studied, may guide the physician to a true conception of the malady which is present, and if carelessly noticed may lead him far away from the zone which is actually in trouble. The present book is divided into ten chapters, all of which are readable and interesting. The first deals with the sensation of pain; the second with the functional modification of pain by posture, motion, pressure, food, drinks and chemicals and organic function. Then follows a chapter upon topography in its relation to pain, and another upon the quantity and time of occurrence of pain. chapters deal with pains arising from diseases of the nervous system, the joints and digestive system, the genito-urinary system, the respiratory and circulatory systems, and lastly, there is a chapter upon cutaneous tenderness in visceral disease. It will be remembered that in the English-speaking world Head has done more toward the localization of pain in diseases of the internal organs than any one else, and he naturally is largely quoted in the text by the author. The eighteen figures which illustrate the volume appear between the text and the index.

CURRENTS OF HIGH POTENTIAL, OF HIGH AND OTHER FREQUENCIES. By William Buchanan Snow, M.D. Second Edition. The Scientific Author's Publishing Company, New York, 1911. Price \$3.00.

What with the enthusiasm of certain electrotherapeutists and the business enterprise of manufacturers the subject of the use of

high-frequency currents is one which just at present is greatly interesting many practitioners. We think it can be said with truth that the profession can be divided into several classes in regard to their confidence in these methods of treatment. There are some who are so enthusiastic as to believe that by these means we have at last reached a method of curing almost every ailment. Then there is a second class who after installing and employing the apparatus which is necessary is within a short time equally enthusiastic, but which, after further use, seems to lose confidence, so that the apparatus which has heretofore been constantly employed is, after a time, but rarely resorted to. Finally, there is still another class which is entirely doubtful. In other words, they are unbelievers. As a matter of fact, a man belonging to any one of these classes is partly in error. There can be no doubt that high-frequency currents are possessed of some therapeutic power, and that this power is of such a degree that this method of cure or treatment cannot be entirely set aside by those who have little con-Indeed, like most other fidence in it. remedial measures, it has distinct limits of usefulness and can be used or abused with alarming results. Dr. Snow writes as one who is not only enthusiastic but thoroughly experienced along these lines, and his book is well worth consideration by all the classes which we have named, since by this means each will be able to obtain a clear and correct conception of the technique employed and the results which can be obtained.

A HANDBOOK OF MEDICAL DIAGNOSIS FOR PRACTI-TIONERS AND STUDENTS. By J. C. Wilson, A.M., M.D. Illustrated. Third Edition. Thoroughly Revised. The J. B. Lippincott Company, Philadelphia, 1911. Price \$6.00.

This is one of the most exhaustive books upon Diagnosis which has appeared in the English language, covering no less than 1438 pages. As we pointed out in the review of the first edition, it is in reality a text-book of the practice of medicine with treatment and pathology left out; combining therewith other parts which deal with the diagnosis of disease. It is copiously illus-

trated with charts, pictures of patients in health and disease, and diagrams. of these diagrams are excellent; others are not so accurate, as in the colored diagrams which are found in the opening pages of the book. Most of the material which deals with special subjects has been contributed by assistants or friends of the author, whose aid he has obtained in order that he might present the views of those who are competent to deal with the technique of laboratory investigation. The book is an excellent one, and its value is proved by the fact that it has reached its third edition two years after the first appeared.

An Introduction to Therapeutic Inoculation. By D. W. Carmalt Jones, M.A., M.D., M.R.C.P. The Macmillan Company, New York, 1911. Price \$1.25.

In a book of less than 200 pages Dr. Jones discusses the principles and practice of therapeutic inoculation, or, as it is commonly called to-day, vaccine therapy. Beginning with chapters upon spontaneous recovery from bacterial infection and on the artificial stimulation of the natural powers of recovery, it passes to the preparation and use of vaccines and the results obtained by employing them in treatment. In the second part of his volume he pays particular attention to vaccine therapy and diseases of the skin, the alimentary tract, the respiratory tract, the bones and joints, the lymphatic system, diseases of the genito-urinary tract, and diseases of the eye and ear. In the appendix a description of the technique for the preparation of vaccines, for the estimation of the opsonic index, and other information is carefully and accurately given. Those who are interested in this subject, as most practitioners are at this time, should thoroughly acquaint themselves with its contents.

BIOLOGICAL ASPECTS OF HUMAN PROBLEMS. By Christian A. Herter, M.D. The Macmillan Co., New York, 1911. Price \$1.50.

As most of our readers know, the medical profession was deprived of one of its brightest ornaments by the death so early in his career of Dr. Herter, who had done

so much with his ample means, active mind, and strong interest in humanity to advance medicine in this country during the last twenty years. The present volume is composed of manuscript left in the form of a connected draft by Dr. Herter at the time of his death. It is based on notes begun during a trip to Egypt in 1906, when it occurred to the author that the discussion of certain human problems from the biological standpoint might prove helpful to his children. The opening chapter deals with the animal body as a mechanism; the next with growth and reproduction; and the third with consciousness and the will. Book Two, as it is called, which is a subdivision of the present volume, deals with the instinct of self-preservation; the final chapter in this section deals with death and immortality. Book Three deals with the sex instinct, and the discussion of this interesting problem is excellently carried out. The last book, or department, considers the fundamental instincts in their relation to human development.

This is a book that the busy doctor can pick up from time to time, and by reading a chapter here and there get clearer and better views of the problems as they affect him and his patients.

A Manual of Fevers. By Claude Buchanan Ker, M.D., F.R.C.P. Oxford University Press, New York, 1911.

This is a small volume of less than 300 pages, prepared by one who has had much experience in the treatment of the eruptive fevers. Dr. Ker is also Lecturer on Infectious Diseases in the University of Edinburgh, and has written a larger and more comprehensive volume, which we have previously reviewed with praise, upon this subject. This little book affords a useful form of collateral reading to the student who is studying a book of the Practice of Medicine, and presents in a succinct form practically all the information which is desired by the general practitioner who is called upon to treat this type of cases; and what general practitioner is not face to face with these maladies?

The directions as to diagnosis are clear, and the differentiation of the various forms of infection affords, in a brief form, the facts which the physician and the student must needs remember.

FOOD VALUES. By Edwin A. Locke, A.M., M.D. D. Appleton & Company, New York, 1911.

In a small book of about 100 pages Dr. Locke gives us practical tables for use in private practice and public institutions in connection with the question of food and By far the greater portion of nutrition. the book is taken up with such tables, and is therefore anything but readable in the ordinary sense. The first 21 pages are devoted to the methods of cooking food, the body's preservation of nutrition, the digestibility of food, and the various proportions of protein, carbohydrate, and hydrocarbon which are needed for the maintenance of health and by those who are suffering from disease.

THE WAY WITH THE NERVES. By Joseph Collins, M.D. G. P. Putnam's Sons, New York, 1911. Price \$1.50.

This book is composed of a number of letters bearing a similar title which were contributed from time to time by Dr. Collins to the pages of the New York Medical Record. Many of our readers are probably familiar with them in the earlier form of their appearance. The book is designed to meet the interest of the layman in this subject as well as to stimulate the interest of medical men. The author believes that there is no reason why the layman should not be made acquainted with modern views and with the present-day opinions on nervous diseases.

CLINICAL DIAGNOSIS. A Text-book of Clinical Microscopy and Clinical Chemistry. By Charles Phillips Emerson, A.B., M.D. Third Edition. The J. B. Lippincott Company, Philadelphia, 1911. Price \$5.00.

When the first edition of this book appeared in 1906 we reviewed it very favorably, although some of our contemporaries seemed to think less well of it. It is written, as its title indicates, distinctly from the standpoint of the clinical laboratory,

and so is a book which is used by the physician in his office and laboratory in the examination of secretions, excretions, and sputum rather than with the idea that he will be able to employ its text directly at the bedside. The descriptions of technique and the details as to the products which are obtained by various processes are clearly described in words and well illustrated in black-and-white illustrations and in a large number of colored plates, most of which are beautifully reproduced. As the book covers nearly 750 pages, it is readily recognized that it is exhaustive in the manner with which it deals with the various topics considered. We believe, as we stated in our notice of the first edition, that it is one of the best books for students and practitioners which has appeared.

THE PHYSICIAN'S VISITING LIST FOR 1912. P. Blakiston's Son & Company, Philadelphia, 1911.

This Visiting List, which has now been placed before the profession for sixty-one years, still possesses the attractive qualities of the earlier issues. It occurs in four forms: One for 25 patients; one for 50 patients; another for 50 patients arranged in two volumes; one for 75 and one for 100 patients per week. These four forms occur in what is known as the Regular Edition. There is also a Perpetual Edition and a Monthly Edition. The price of the volume for 25 patients a week is \$1.25; for 50 patients a week, \$1.50; for 75 patients a week, \$2.25; and for 100 patients per week, \$2.50.

Text-book of Embryology. By F. R. Bailey, A.M., M.D., and A. M. Miller, A.M. 515 illustrations. Second Edition. William Wood & Co., New York, 1911.

This work, admirably suited to the needs of the student of medicine, has rapidly gained in popularity, as attested by the fact that it has become necessary to publish this second edition within less than two years. The rapid progress made in the science of embryology in recent years has compelled a fuller and revised treatment of several paragraphs, and the few errors of the first edition have been corrected. The chapter on

the nervous system written by O. S. Strong is one of the best descriptions extant. Obscurities occur in the consideration of gastrulation, largely because of the scarcity of early human embryos. The significance of the neurenteric canal is not clearly stated in this connection, but then hardly any text-book does so.

The book promises to achieve continued success on its own merits and be of great interest and aid to the student of medicine.

E. A. S.

DISEASES OF THE DIGESTIVE CANAL. By Dr. Paul Cohnheim, from the Second German Edition. Edited and Translated by Dudley Fulton, M.D. Illustrated. Second Edition. The J. B. Lippincott Co., Philadelphia, 1911.

We have already reviewed in terms of praise this excellent manual, the first English edition of which appeared in 1908 and the first German edition in 1905. The translator has succeeded in presenting all the views of the author correctly and succinctly without in any way impairing the value of the text or falling into the error so common to translators of being too literal in the process of changing text from one language to another. The excellent illustrations which the book contains, the formulæ which are given, and the directions which are presented for the use of various diets and other forms of treatment should prove popular with the general medical reader.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Articles. Edited by Henry W. Cattell, A.M., M.D. The J. B. Lippincott Company, Philadelphia, 1911. Price \$2.00.

The present volume of International Clinics contains articles upon Therapeutics, Medicine, Pediatrics, Neurology, Surgery, Diseases of the Ear, Obstetrics, Ophthalmology, and the Economies of Medicine. It is copiously illustrated. Probably the articles which will prove most interesting are those upon the modern treatment of arteriosclerosis by Harlow Brooks; the investigation of the duodenum by A. L. Benedict; venereal diseases in children and the surgical treatment of the disabilities following poliomyelitis.

ANESTHESIA AND ANALGESIA. By J. D. Mortimer, M.B., F.R.C.S. University of London Press, 1911. Oxford Medical Publications, New York, 1911.

In fourteen chapters the author of this little book gives definite and direct instruction as to the means which should be taken to relieve pain, and to prevent it during the performance of surgical operations. various anesthetics and their mixtures are carefully considered. The difficulties, dangers, and emergencies are discussed, as are also the after-effects of anesthetics. are interested to note under the head of Spinal Analgesia that the author believes that this method should only be resorted to when the ordinary anesthetics are quite impossible, and, furthermore, that means for giving a general anesthetic should be at hand in case the spinal method fails. The fourteenth chapter is an important one in that it deals with the medicolegal position of the anesthetist.

LIFE, DEATH, AND IMMORTALITY. By William Hanna Thomson, M.D., LL.D. The Funk & Wagnalls Co., New York, 1911. Price by mail, \$1.10.

Many years ago Dr. Thomson was one of the active medical teachers in New York. During his later years he has contributed to current literature a number of articles dealing with subjects more or less nearly related to medicine, attempting to ask and answer the question "What is Physical Life?" and to write upon "Brain and Immortality." The text of the present book is not as deep as one might suppose from its title. It is rather a series of brief essays, written as one man might write to another in a fairly long letter, giving vent to his views and conceptions of these infinite subjects.

THE PRACTICAL MEDICINE SERIES. Edited by Gustavus P. Head, M.D., and Charles L. Mix, A.M., M.D. Volume VI: General Medicine, Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, A.M., M.D. The Year Book Publishers, Chicago, 1911. Price \$1.50.

In a space of about 350 pages Drs. Billings and Salisbury attempt successfully to sum up for us the advances which have been made in medicine during the previous year. Illustrations are employed when

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necessary, but are few and far between. We note with interest that they call attention to the investigations made by Tyson and Jump concerning the treatment of ascites by the intraperitoneal injection of adrenalin.

THE FOURTH PHYSICIAN. A Christmas Story. By Montgomery Pickett. Illustrated. A. C. Mc-Clurg, Chicago, 1911.

This is a brief story dealing with medical matters, as is evidenced from its title, in which a physician and an old colored man are prominent characters. In less than 150 pages the author has his say, and the medical man who purchases this little volume can pass with it a pleasant hour and interest and amuse patients who may be waiting in his office in times to come.

MINOR AND EMERGENCY SURGERY. By Walter T. Dannreuther, M.D. W. B. Saunders Co., Philadelphia and London, 1911.

The author states that this book has been prepared expressly for the members of a resident staff; for the interne's guidance when acting independently; to assist the ambulance surgeon in emergencies, to simplify practical work for the junior, and to aid the senior in some of his predicaments. It is published in the hope that it may be of service to the general practitioner, even the specialist.

The book opens with a few words of advice to the interne, some stress being laid upon his proper conduct in the presence of nurses and orderlies. Brickner is quoted to the effect that the visiting chief has as a rule a better reason for being wrong than the interne has for being right. As for the ambulance surgeon, it is aptly remarked that he should never forget that he is a gentleman as well as a physician, and should conduct himself as both.

The treatment of wounds by irrigation with hydrogen peroxide followed by injection of tincture of iodine is advised, except in apparently clean wounds, when the peroxide is omitted. Strapping is illustrated and described. Fractures are treated in some detail in so far as their dressings are

concerned. The illustration of the method of treating fracture of the patella by straps is somewhat unusual at the present day. Under the term acute pyogenic infection are described abscess, furuncle, carbuncle, and cellulitis. It is somewhat surprising to find no mention of cupping as a means of evacuating the pus and sloughs of boil or carbuncle. In place of this the author advises the exertion of gentle but firm pressure over the surrounding skin. For systemic pyogenic infection an enema consisting of 4 ounces of magnesium sulphate dissolved in a pint of cool water, repeated every two hours, is strongly advised. Treatment of tetanus is regarded as prophylactic-i.e., thorough cleansing and subcutaneous injection of 20 Cc. of tetanus antitoxin just above the wound. Saturated solution of either sodium bicarbonate or picric acid is given as the best treatment for burns. Carron oil is also highly commended. Ulcers and bed-sores are treated in accordance with accepted ideas. Schafer's and Laborde's methods of artificial respiration are described. Among the minor operations are classed laryngotomy, tracheotomy, hypodermic injections, skin infiltration, anesthesia, aspiration, paracentesis, spinal analgesia, phlebotomy, hypodermoclysis, enteroclysis, intravenous infusion, direct transfusion, catheterization, vaccination, skin grafting.

OPERATIVE OBSTETRICS. By Edward P. Davis, M.D. Illustrated. W. B. Saunders Co., Philadelphia and London, 1911.

This book, profusely, admirably, and intelligently illustrated, and with a comprehensive bibliography appended to each section, fulfils in an ideal way the purpose indicated by the title. Davis says that the moving thought in its creation has been to state for the benefit of the profession as concisely as possible the present-day methods of operating in obstetrics. After a brief chapter devoted to the Anatomy of the Parts Involved, there follow clear discussions concerning the Condition of the Birth Canal Regarding Asepsis, the Prevention and Control of Hemorrhage in Normal La-

bor, the Pregnant Woman as a Surgical Patient, Obstetrical Anesthesia, and the Technic of Obstetric Surgery.

Part I is devoted to the Surgery of Pregnancy, including under this heading Rapid and Forcible Dilatation of the Womb, Operation for Appendicitis, Cholecystotomy in Pregnancy, Operations upon the Kidneys During Pregnancy, Abdominal Section During Pregnancy, and Operation for Ectopic Gestation.

The second part is devoted to the Surgery of Labor; the third part to Surgery of the Puerperal Period; the fourth part to Surgery of the New-born, including the Treatment of Fractures, the Treatment of Brachial Palsy, Injuries to the Scalp, Congenital Lack of Development, and the Treatment of Infection. The book ends with some pertinent remarks on circumcision. The work is thoroughly to be commended.

ORTHOPEDIC SURGERY. By Edward H. Bradford, M.D., and Robert W. Lovett, M.D. William Wood & Company, New York, 1911.

The distinguished reputation of the authors of this work insures for them a cordial reception of a book which they state represents a condensation of matters pertaining to orthopedics which may prove serviceable to students and to practitioners, this condensation embodying the generally accepted and authoritative opinions as to the nature and treatment of the affections under consideration.

Following the first chapter, which is devoted to a general consideration of tuberculous disease of the bones and joints, the Spine, the Hip, and the Knee are treated in most satisfactory detail. Arthritis deformans, admirably illustrated and graphically described, has, concerning its etiology, no new light thrown upon it. Sprains, Curvature of the Spine, Infantile Palsy and other forms of Paralysis, Functional Affections of the Joint, Congenital Dislocations, Talipes, Flatfoot-these are the subjects which receive major consideration. Many others of minor import are most satisfactorily discussed. It is very gratifying to

find the authors expressing decided views in regard to treatment of individual affections, since their enormous experience fully entitles them to speak with authority. The practitioner will find in this book an entirely satisfactory guide.

Tuberculous Diseases of Bones and Joints. By Sir W. Watson Cheyne, Bart., C.B., F.R.S., F.R.C.S., D.Sc., LL.D. Illustrated. Henry Frowde, Oxford University Press. Hodder & Stoughton, London, 1911.

The second edition of this admirable work indicates that Cheyne, while keenly alive to the modern conservative tendency concerning localized tuberculous manifestations, is not of those who believe that this infection should be considered as belonging to the domain of the internist. The careful pathological study set forth in the first chapters of the book is followed by an admirable summarization of the principles of treatment.

The second section of the book is devoted to symptoms and treatment of tuberculous disease of the various joints and bones.

This constitutes a most satisfactory guide both to the operating surgeon and to him of more conservative tendency. The work is one with which all surgeons who have to do with affections of bones and joints should be familiar.

SURGICAL APPLIED ANATOMY. By Sir Frtderick Treves, Bart. Sixth Edition, Revised by Professor Keith, M.D., F.R.C.S. Illustrated. Cassell & Company, Ltd., London, New York, Toronto, and Melbourne, 1911.

This, the sixth, edition of a book at one time the most popular of its kind and still widely used and quoted, is chiefly altered by Keith in regard to the glands of internal secretion, the lymphatic system, and the anatomy of the abdomen, and by new facts which have been discovered by the use of the x-ray in examining the human body. Keith states that the book still retains the spirit, form, and size given to it by its distinguished author. The spirit is that of scientific accuracy; the form is of logical and applicable arrangement; the size fitted to the pocket of the busy doctor.

# CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

Without doubt the most important event in the medical world at the present time in this country is the passing of the Insurance Bill. We have had occasion to refer to this in previous letters, and shall therefore not weary our readers by recapitulating those clauses which do not find favor in the eyes of the profession. It is, however, of importance to mention that the bill does not come into operation for at least six months. During this interval the medical profession will have time to organize a definite resistance to it. As a body they have expressed themselves as unwilling to serve under the conditions laid down, and consider that they have not had their interests attended to in the best possible way, basing this view on the fact that their chief organizer and representative has been given a lucrative government post under the new This was, we understand, approved by the Committee of the British Medical Association, but has not met with the approval of the large body of members. In fact it is regarded as a clever move on the part of the Chancellor of the Exchequer, having for its motive the splitting up of the organized opposition of the general body of medical men throughout the coun-Be that as it may the fact remains that there is general and widely spread dissatisfaction over this appointment, and there have been many threats that members of the B. M. A. will resign their membership in this body. This would obviously be a bad move and would be playing into the hands of the government. Wiser counsels are likely to prevail; indeed, the Association is trying to enlist the support of those members of the profession who have either never joined or who have resigned their membership from whatever cause. It is well known that many have not approved of the conduct of the Association when

faced with different ethical questions. This spirit of dissatisfaction showed itself on Tuesday last, when a meeting was convened—but not under the auspices of the B. M. A.—at the Queen's Hall, a meeting which was very largely attended, to protest against the bill. One of the prominent officials of the Association was howled down, and in spite of the protest of the chairman to allow a fair hearing he was successfully prevented from uttering more than a few words, and these few words were received with expressions of marked and forcible disapproval.

One of the medical journals which has gained a large circulation and offers a certain amount of insurance against illness, recently sent out a referendum paper which has been largely answered, and is now seeking to obtain promises of adherence to the policy of resistance to this measure from the bulk of the medical profession, so that on all sides there is tumult and a spirit of unrest. It was remarked by one of the junior members of the government the other evening at a semipublic dinner, in a sneering sense, that the medical profession ought not to object to trades-unions because it was one of the best examples of that order. The answer was that the profession does not object to trades-unions at all, but only to the methods employed by those bodies. I am not sure that coercion is not being attempted in some quarters to make men join the B. M. A. Of course one of the chief bones of contention is the question of remuneration for medical services. No doubt the general health of the nation has improved enormously since the original standard of annual remuneration was fixed, but since that time wages have about doubled, the scientific knowledge which has to be acquired has increased, the duration of the course of medical study has been prolonged in proportion, and yet with these and other contingent considerations the payment offered is to remain unaltered. This is a ground for just complaint. The

next few years are bound to be of great importance to the medical profession, and it will be obviously wise either to stick to the B. M. A. whatever its faults or to enroll in some similar body which may come into existence. There seems to be a strong inclination among the members in one of the provincial towns to desert the B. M. A. and form a separate body, owing to the lack of confidence in the present organization.

The Liverpool School of Tropical Medicine has recently published another volume of Annals containing several papers of importance and interest. The school is to be congratulated on a departure from the usual method of only including papers the result of work by those who are intimately connected with the institution. From the pen of Professor Gabbi of Rome is a short paper detailing the results of work done by himself and his colleagues, which demonstrates clearly that many of the milder forms of fevers which are rife in Italy and Sicily are actually due to the same micrococcus as produces the more severe disease Malta fever. This paper goes further and shows that the mode of infection is in most cases identical, the virus being transmitted through the milk of infected goats. The percentage of infected goats varies in different parts of these countries from three to seventeen. This paper is followed by another on the same subject by Newstead, who has shown that the "Papataci" flies can also act as carriers of the disease. This fly is very small, and the mosquito-net meshes are not fine enough to hinder its passage. Newstead suggests the employment of an electric extraction fan to produce an outgoing current of air, against which the fly would not be able to force an entrance. Simpson and Edie give a résumé of Schauman's work showing that the use of decorticated grain is in great measure responsible for the production of beriberi, and detail certain experiments performed on animals in which conditions similar to the disease under discussion can be produced by prolonged feeding on grain treated in this way. These facts are of

especial interest at the present time owing to the recent agitation in favor of standard or whole-meal bread. Altogether the volume is very interesting and well worth reading.

The King Edward's Hospital Fund have again issued their annual report and show that the economies originated by them some years ago have during the past year been well maintained. Naturally the saving does not show such large sums as during the first years of the fund's existence, but even in the past twelve months there has been a saving of more than £2000 in hospital expenditure.

The Society of Apothecaries, which was incorporated as a company as long ago as the time of James the First, has decided to let part of its site on a building lease, the annual ground rent of which should bring in over £1000. The Society possesses a large site close to the offices of the Times newspaper, which has been in its possession since the date of incorporation. The first hall, which was built about this time, was destroyed during the great fire of London, and the present building was erected in 1670. Seventeen years later there was a great conflict between the apothecaries and the physicians. The latter wanted to restrict the former to merely selling drugs prescribed by themselves and to prohibit the power of the apothecaries in any form of prescribing. A great controversy existed on this question, but in the end the matter was taken to the House of Lords, where it was finally decided in favor of the apothecaries, who to this day continue to act as an examining body in the final subjects, and grant a diploma which allows the holder to practice. The Society will still retain the old hall and examination rooms in the present building, but the druggist's shop and some dwelling-houses with a warehouse adjoining will be let off. The Society owns other extensive premises, to which the druggist department will be transferred, so that the net result of this alteration will be to separate the examining hall from the trading buildings, and to secure an increased income.

# THE THERAPEUTIC GAZETTE

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# ORIGINAL COMMUNICATIONS.

## THE TREATMENT OF MELENA NEONATORUM BY HUMAN BLOOD SERUM. 1

BY WILLIAM R. NICHOLSON, PR.B., M.D.,

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While the word melena forms an integral part of the title of this paper, it is to be understood that it is used out of respect alone for its position in a nomenclature which is scientifically a thing of the past. The type of case the subject of this communication does sometimes show this symptom, melena, as a major manifestation, but more often as only a very minor one. Possibly it would be more exact to give the title hemorrhagic disease or diathesis to this symptom-complex, but it is to be remembered in forming one's conception of the matter that the general symptom hemorrhage may be but a minor expression of this diseased condition during life, and in fact that it may be entirely absent clinically, only appearing upon post-mortem examination.

The clinical picture presented by these cases is most striking. The insidiousness of onset it is true is often diagnostically deceptive, but the rapid development of grave symptoms soon banishes any attempt to belittle the condition of affairs. Strangely enough the babies who have developed this diseased condition have almost without exception in our experience been most beautiful specimens at birth, normal or above in both weight and strength. It may also be noted in passing that the labors in the vast majority of these cases have been easy.

A few days after birth, however, it is observed that the child has some slight temperature; the stools are also of a faulty color, either being dark-green or containing blood, which may be either occult or frank. A papular eruption is to be found in a large proportion of the cases as a rather early symptom, and this may afterward become a true hemorrhage into the subcuticular tissue. Anorexia, vomiting, and indeterminate nervous symptoms are also of course in evidence, and in a large number of the cases bleedings from various parts of the body make their appearance. Any or all of the mucous and serous membranes may be the site of this hemorrhage.

The most usual sites of bleeding are the skin, as has been mentioned, the cord or umbilical ulcer, the vagina, the bowel, and, as in one instance of the writer's, the mucosa of the alimentary tract high up, the blood flowing from the mouth of this child in a steady little stream. Keeping pace with these alarming symptoms there is a progressive emaciation and weakness, which in a period of no more than forty-eight hours changes the child from a condition of exuberant health to that of extreme malnutrition.

In the experience of the writer, comprising about a dozen cases, there has been no benefit from any form of treatment except in the one case to be reported. With the just mentioned case as an exception all the other babies have died within a week of the onset of symptoms. The writer's mortality has therefore been one hundred per cent, and this in general has been the experience of most other observers, at least until within a very recent period. DeLestre reports a few cures by the withdrawal of a

small amount of blood, and Cope, working under Hamill, has in one instance seen the same remarkable result. In general, however, the prognosis has been considered practically hopeless.

As yet there is no etiology established In former times when with certainty. Buhl's and Winckel's diseases were considered pathological entities the way seemed plain enough. Syphilis, cerebral injuries, hemophilia, etc., were confidently believed to be the causes of this condition, and the spirit of investigation was stilled. A little later, however, this confidence began to weaken, and the same diseased conditions were not considered as truly causative but simply as predisposing factors, while at the present day all consideration has been withdrawn from them as in any wav concerned, since any one having experience with the manifestation of pathology which we are considering will be impressed by the fact that in the large proportion of the cases the children are particularly healthy at birth. To the writer's mind the preponderance of probability tends toward an explanation in which septic infection plays the true initial rôle, the blood changes and other manifestations, varying as they do more or less with each case, being simply expressions of different varieties or doses of poison. This theory, while it does not explain all the manifestations, and while there are links in the evidential chain yet to be supplied, seems to fit the clinical picture better than does the theory of a congenital maldevelopment of the blood chemistry, for the reason that while it is perfectly conceivable that a healthy child may receive a fatal dose of infection during or soon after birth, it is hardly to be imagined that a baby with a congenital blood disease of whatever nature could develop in utero to perfect maturity and yet within a few days develop a disease which in spite of all treatment progresses rapidly to a fatal issue.

To say that the complement is lacking or that thrombokinase or prethrombin is at fault is not to express a true etiology, since as has been said it is not conceivable that a child can develop *in utero* to perfection, it being as dependent for its health upon its blood before birth as in after life, and yet within a few hours or days after the inception of extrauterine existence, and without any cause operating de novo, show such a calamitous pathological outbreak as the condition under discussion. On the other hand, if it be granted (it is admitted freely that it is not as yet proven) that septic infection is the fundamental pathological factor, the changes in the blood chemistry may by analogy be explained on the basis of the operability of various toxins.

Believing as I do that the blood changes, chemical and otherwise, are the results of a primary sepsis in at least a large proportion of these cases, it is natural that the avenue and source of this infection should be considered. As to the avenue of the infection it does not seem to the writer that it is justifiable to lay the blame upon the cord with the frequency usual to those considering this subject. Any one who is accustomed to inspect the stump of the umbilical cord and the ulcer left after its fall, will realize how general are the conditions in perfectly healthy babies, upon which some investigators have laid stress, as being the evidence of a pathological change. In other words, there is constantly moisture, some peripheral redness, and if very strict cleanliness has not been observed in the care of the child, quite a little odor. Moreover, if one will realize, first, how difficult it always is to infect granulating tissue, second that after a ligature has been applied infection through the exposed end of the cord is impossible, and third that the children usually die before the cord has had time to fall, it will at least seem reasonable to demand stronger proof of cord infection than has so far been produced, and to continue in the belief that the usual mode of entrance is by some other avenue. From the fact that in probably the large majority of these cases there is marked primary involvement of the gastrointestinal tract, and moreover that this tract is the one avenue through which infection may enter with the greatest ease, it has been for years the belief of the writer that this tract offered the usual way of approach, and in accordance with this belief

he has in so far as it has been possible to him excluded the so-called mouth cleansing after birth from his hospital services and private work, since he has been convinced that far more chance is given for the introduction of organisms by this attempt than for their removal, even if they are there to be removed.

One other point is felt of sufficient importance to be mentioned, namely, that while in older times these infections were more common in maternity hospitals, as a matter of fact the writer has seen several cases in private work, while they have almost disappeared from his hospital ser-It may be that the introduction of the steam sterilized baby bath-tub, together with the greater care in handling young infants, has decreased markedly the incidence of the condition in hospitals. Several cases reported in a previous communication occurred in an institution in which no such care was possible, the needful facilities being lacking. It is to be remembered, however, that the dangers incident to the first few days of life in a hospital nursery are absent in private practice, in so far as they are dependent upon the transference of infection from one child to another, and yet these cases occur to-day in private work. This being so, it would seem to the writer that the evidence bears out the belief previously expressed that it is an infection by the mouth, and further that such infection occurs in the maternal birth canal. It is a matter of common knowledge that the lower part of the genital tract is rich in organismal life, and further that the head often remains stationary in the lower vagina for a considerable time. Moreover, in a certain percentage of cases, through interference with the placental circulation, the infant attempts to inspire while the head is still in the vagina; this is evidenced by the sudden imperfect extension of the head in the absence of a pain and is quite frequently noticed. It is the opinion of the writer in view of these facts that prophylaxis of many of these cases is impossible except in so far as prompt delivery may serve.

The recovery of the case now to be reported, the said recovery being undoubtedly due to injections of blood serum, has greatly impressed me. The details of the case are as follows:

Baby M. C. M. was delivered at full term. The parents were both healthy. The labor was normal and progressed rather rapidly until the head of the child was in sight on the perineum. Slight delay occurred at this point, but the retardation was in no sense unusual, and we were confidently awaiting spontaneous delivery when suddenly there was a copious discharge of meconium alongside the child's head. This was believed to be due to the interference with fetal circulation caused by the increased frequency of the uterine pains, which, as has been noted, had been for a time un-Forceps were accordingly applied at once, and the child was rapidly extracted in a moderate asphyxia and fairly plastered with meconium. The convalescence of the mother was uneventful throughout. The child, a particularly fat and strong baby, did well until the fourth day, except that it had a slight elevation of temperature, it being over 101° all the third day and reaching 102° on the morning of the fourth. The stools also continued dark, but at this period they were simply meconium. On the morning of the fourth day a papulosquamous eruption was noticed on the chin. The characteristics of this rash may be appreciated by the fact that the nurse believed it to be due to irritation, but careful inspection based on previous experience did not enable me to take this comforting view. Aside from this, and the fact that there was the before-mentioned temperature, a symptom not unusual in new-born babies, there was nothing to cause foreboding at this time except that the child did not look as well as it had done previously; but I left her feeling far from comfortable, and was not at all surprised to be called back within an hour because of bleeding from the cord. spection showed that the blood came not from the mummified distal end of the cord but from its periphery, just external to the

abdominal insertion. Adrenalin and pressure having failed, a ligature was passed by needle through the cord just within the abdominal wall, which checked the bleeding The diagnosis was established, however, to my mind, and corroboration was furnished by the occurrence of vaginal and some rectal bleeding later on the same day. Slight traces of blood in the vomitus and a hematoma under the left lateroposterior neck muscles followed within the next two days. The emaciation progressed even more rapidly, it seemed to me, than is usual in these cases, and was associated with decided cervical retraction and restlessness. The child also seemed hyperesthetic all over its body, crying whenever it was touched, its tongue was dry, and its general appearance caused the most grave apprehension.

As a forlorn hope, in fact without any real belief that any good would result, I determined to try the injection of normal human blood serum. I had read the articles which appeared some two years ago by Dr. Welch, and with the most unbounded skepticism I made arrangements with Dr. Dorrance to procure a specimen. In passing I would like to remark, in order to emphasize the wonderful change that subsequently occurred in this child, that when Dr. Dorrance first saw her, on the occasion of the first injection, he felt that it was most foolish to interfere with what to both of us seemed to be her manifest destiny. In the emergency we were compelled to use the father as the donor for the first injection. A little more than 20 Cc. was injected into the tissue of the back. The next day 18 Cc. was injected in the morning and 10 Cc. at night. On the next day there was vaginal bleeding, but only 6 Cc. was injected, as our supply was temporarily low. The following day the cord separated in a perfectly normal manner; there had been no bleeding externally during the night, but the neck was discolored and swollen. Two doses were given on this day, the morning measuring 18 Cc. and the evening 14 Cc. Upon this same day a small swelling, which we believed to be a cephalhematoma, made its appearance. The next day the first normal stool was passed. The baby was evidently improving, and but 6 Cc. of serum was administered. A supply was kept in readiness for a couple of days, but was not used, as the child was free from any sign of active bleeding and the hematoma was decreasing in size. The weight was also increasing, and the temperature remained normal. I have had the pleasure of seeing this child within the past two weeks, and she is a large, healthy girl, presenting no evidence of the severe illness just recorded.

There is one point which I think would be well to emphasize in passing, namely, that as soon as the child showed symptoms of the diseased condition it was immediately placed upon artificial feeding. This I consider the proper thing to do in all cases of severe illness within the first few days of life, not only for the reason that the maternal supply at this period is so scanty, but also because I believe that injurious maternal milk is not as rare a commodity as some seem to believe.

The method of giving the injections is simplicity itself. Before considering it in detail I would mention that it has a distinct advantage over actual transfusion, which has been suggested and performed by some to meet the same indications, for two reasons: first, that the latter requires special skill for its performance, it being a delicate operation even in the adult and requiring a few special appliances; and secondly, that while there is never any difficulty to obtain donors of serum, on the other hand, thanks to the untiring efforts of the ever-present newspaper reporter, the public looks rather askance at requests for donors in actual blood transfusion. In the case just reported this difference was made very evident by the increase in the choice of donors which was afforded us after they were assured that they would simply have to submit to an old-fashioned bloodletting.

One word as to the method employed. Dr. Welch removes the blood from the vein by aspiration, and this procedure, while requiring a little training and a small amount of special apparatus, is without doubt bet-

ter than that used by us in this instance. Being unprepared and face to face with a distinct emergency, we simply incised the skin after careful cleansing, and collecting the blood by gravity we allowed the serum to separate spontaneously from the clot. With an ordinary antitoxin syringe the injection was made into the back of the child at a point anywhere from its scapulæ to its buttocks.

Small 1/4-liter flasks were found to give relatively the largest amount of serum, and by using this size it is not necessary to place them in an inclined position while the serum is separating.

From my experience with the overwhelming mortality of this condition under expectant or any rational plan of treatment, the outcome of this case impressed me at the time as verging on the miraculous. I have no doubt that a fatal result was averted by the injections of normal human serum, and I am led to hope that in this very simple therapeutic measure, which is always ready to the hand of even the isolated practitioner, we may find ourselves in possession of an agent which will be found potent for good in combating diseased conditions before which we have in times past confessed defeat.

# NORMAL HUMAN BLOOD-SERUM INJECTIONS IN MELENA NEONATORUM AND OTHER CONDITIONS.

BY J. E. WELCH, M.D., NEW YORK,

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Approximately eighteen years of trial to which the serum of the horse, immunized artificially against the toxin of diphtheria, has been subjected has put it in the rank of a specific in the treatment of diphtheria. The principle of artificial immunization operative in connection with this serum has been adopted in other instances, so that now we have other antitoxic sera, more or less efficient, developed against several organisms. In the meantime, during the growth of knowledge concerning the curative properties of the serum of animals artificially immunized, it has been learned that normal sera possess under certain circumstances a decided therapeutic value.

Those experienced in the use of the various sera are well aware that their advantages are not unalloyed. Associated with the brilliant successes attending their use are numerous tragedies, begotten of their untoward effects. These effects are very commonly encountered when the serum of an animal is used in a different species, but fortunately are rarely severe enough to produce death, and they do not occur when the serum of the same species is used. This latter observation I made in 1902, in using normal human blood serum after having

had a disagreeable experience with the use of diphtheria antitoxin.

A young man, twenty years of age, ill with pulmonary tuberculosis, was admitted to the New York City Hospital. After a fair trial of the then recognized methods of treatment, I suggested to the attending physician that we withdraw a quantity of blood from some person convalescing from a surgical condition, which had not in any way affected the quality of the blood, allow it to clot, and with the separated serum inject our tuberculous patient, having in mind the possibility of furnishing some disease-resisting substance which had prevented the donor from contracting tuberculosis. The proposition seemed impracticable at the time, and a substitution was made. It was decided to use normal horse serum instead. This also was not procurable, but a substitute was furnished by Dr. William H. Park, in the form of a lowdiphtheria antitoxin, having a strength of 150 units. It was reasoned at the time that the antitoxic properties of the serum, which was elaborated specifically against the diphtheria toxin, would also neutralize the toxins of other infectious diseases, a view then quite commonly held.

Following directions, I began subcutaneous injections of the weak antitoxin. Ten cubic centimeters were given three times per day. At the end of twenty-four hours there was a notable change in our patient, but not for the better. He complained of severe headache and excruciating pains in the joints, especially in the knees. temperature, which had been quite constantly about 102°, rose to above 104°, the respirations increased, and there appeared over the entire body the worst itching, burning, urticarial rash I have ever seen. A few more injections were given, and with each the symptoms grew worse, making it necessary at the end of the second day to discontinue the treatment. The injections made our patient worse than he had beenin fact, he never regained the loss induced by the antitoxic serum injections.

Shortly after this experience I succeeded in getting from some of my patients a small amount of normal human blood serum, and made subcutaneous injections in pneumonia, typhoid fever, erysipelas, and The disagreeable experience I had had with the diphtheria antitoxin injections made me overcautious, so that I used of the normal human serum at each dose from one to three cubic centimeters. I made no distinction between the alien and homologous serum. My experience with the larger doses of low-grade antitoxin made me fear untoward symptoms from the human serum, therefore the very small doses were used. Boldness begotten of uniform absence of symptoms following single and repeated injections of small doses of normal human blood serum has led to an increase in the size of the dose. From time to time the amount has been increased, until I am now ready to state that normal human serum in doses of three hundred cubic centimeters, administered subcutaneously, or repeated in smaller amounts over a period of nine months, to the amount of thirty-five hundred cubic centimeters, will not cause any of the symptoms so often produced by single or repeated injections of a foreign serum.

Since the beginning of the use of antitoxin the untoward symptoms have been occasionally fatal and are so frequently met with that they have instilled a fear into many of the profession and the laity. These symptoms appearing after single or repeated injections of alien serum are now known respectively as "serum sickness" and "anaphylaxis." The literature descriptive of the research on this subject is so voluminous as to render a review impossible. Probably every research laboratory in existence has in the past directed, or is at present directing, efforts toward discovering the nature of the sensitizing body, or is endeavoring to discover some substance which will neutralize the sensitizing body. In a recent volume of "Ergebnisse der Allgemeinen Pathologie," which reviews this literature to 1910, four hundred and twenty-two contributions are referred to which deal with this subject.

From all of this study of anaphylaxis have come some very important observations. Those perhaps of most importance, and which should be very seriously considered when the giving of alien serum is proposed as a therapeutic agent, are three in number.

Biedl, Kraus, Arthus, and others have demonstrated that a marked fall in blood-pressure accompanies anaphylactic shock. These authors have also demonstrated that the coagulation time of the blood is considerably lengthened in this condition. The third and most important change brought about is a decrease in the quantity of complement in the blood, which has been proven by Michaelis, Fleischman, Friedmann, Friedeberger, Hartoch, Scott, and others.

Nutritional experiments, dealing with injections of alien serum into guinea-pigs, have proven that it causes either a retarding of growth or death of these animals. Reviewing, then, in a few words, the effect of subcutaneous injections of alien serum, we have the following:

First, serum sickness with its fever, disturbing urticaria, joint pains, dyspnea, albuminuria, hematuria, and occasionally sudden death.

Second, it reduces blood-pressure.

Third, it decreases the coagulability of the blood.

Fourth, it causes a reduction in the amount of complement.

Fifth, it interferes with nutrition.

Subcutaneous injections of homologous serum do not produce the above conditions. In my own experience with the use of normal human serum I have never met with any untoward effects.

For the sake of comparing the nutritional effect of homologous with alien serum, an experimental study with normal human blood serum was made. The subject of the trial was a premature infant, born at about the eighth month of gestation. He took nourishment by mouth badly and steadily declined in weight from two thousand and twenty-five grammes, the weight at birth, August 17, to sixteen hundred and twentyfive grammes, September 5, a loss of four hundred grammes in nineteen days. On September 5 injections of normal human serum were begun and were continued through twenty-one days, to September 26. The baby's food remaining the same as previously, the weight began immediately to increase, and, suffering slight fluctuations, gained steadily for fifteen days to twentytwo hundred grammes, a gain of five hundred and seventy-five grammes. It then receded during the next six days to twentyone hundred and twenty-five grammes, which was one hundred grammes more than the weight at birth. During this period the child received daily subcutaneous injections of normal human serum, in amounts varying from twenty to seventy-eight cubic centimeters, receiving a total of eight hundred and ninety-six cubic centimeters in twenty-one days. At this time the child was taken away in good condition and able to nurse well.

Of other conditions in which I have had experience in the use of normal human blood serum the various bleeding conditions rank first, and of these, more especially the

hemorrhages of the new-born. Experience to date which I have had with thirty-two of these cases now warrants a few conclusions.

The infrequency of this disease and the rapidity with which it proves fatal make it extremely desirable that we have a wellknown specific, easily obtainable, with which to combat it. The beginning of this condition is not always in the same way. The baby may be in every way apparently healthy, plump, rosy, and functionating normally. Without warning it may vomit a quantity of fresh blood or pass bloody or tarry stools, and these may be the only manifestations of hemorrhage. The bleeding may be subcutaneous, of a petechial nature, or occur as hematomata. The umbilical stump, a divided prepuce, or the gums may be the sites of hemorrhage. Fatal internal hemorrhages not infrequently occur without external manifestation and may affect the brain or any of the thoracic or abdominal organs. These cases clinically may show icterus, or may simply grow pale, feeble, and die without apparent adequate cause. The autopsy makes the diagnosis, and we find the hemorrhages usually within the serous cavities or beneath a serous membrane, such as the pulmonary pleura, in the pericardium, under the capsule of the liver, under the kidney capsule, or in the peritoneal cavity. Microscopic examination of the various organs at autopsy shows anemia and cloudy swelling of the epithelium of the parenchymatous organs. The epithelium of the gastrointestinal tract usually shows the most advanced changes of degeneration and desquamation.

Drawing a conclusion from experience with thirty-two cases of hemorrhagic conditions, treated by normal human blood serum, I am convinced that this agent is a specific for this pathological condition. For a partial detailed report on thirteen of these cases I refer you to the June, 1910, issue of the American Journal of the Medical Sciences. Time does not permit a review of the cases not reported, but I will review briefly a few of them; others would be but a repetition.

B. Z., male child, delivered at 9 P. M., October 19. At 9 P.M., October 20, vomited blood; at 11 and 12 P.M. bloody passages. October 21, bloody passages at 3 A.M. and 4 P.M.; October 22, bloody passages at 4 P.M.; October 23, bloody passages at 11 A.M. and 4 P.M.; October 24, three passages free from blood.

Normal human blood serum was injected as follows: October 21, 24 hours after bleeding began, 112 Cc.; October 22, 54 Cc.; October 23, 19 Cc.; October 24, 12 Cc.; October 25, 10 Cc.

When born this child did not have the plump, rounded contours of a normal baby, but appeared poorly nourished. The stools were from the beginning very foul-smelling. The first temperature, taken twenty-four hours after birth, was 100\frac{1}{2}°. On the next day it rose to 103°, and fluctuated between 100° and 103° for a few days, when it returned to normal. When the serum injections were begun the child was too weak to nurse and cried but feebly. Within twenty-four hours after the first injection he was able to nurse his mother, cry more vigorously, and made a steady gain to a normal condition.

N. J. L., born June 10; second child; negative family history; first child stillborn on account of difficult labor. Present labor lasted two and one-half hours; breech presentation; no interference; no anesthesia; weight at birth 5 pounds 12 ounces. Child appeared normal, and cried lustily; no cyanosis. On the third day it was slightly jaundiced. At this time it was noted he had a peculiar cry, there were spasmodic muscular movements, and he stopped nurs-There was no vomiting; the stools became yellow and were normal. Physical examination showed a small child with skin wrinkled, cyanotic and dusky. aroused with difficulty, occasionally giving a loud, shrill cry when disturbed. fontanels were noticed to be tense and bulging. The pupils were slightly unequal, and the eyes were turned to one side at in-There was rigidity of the neck and extremities at intervals. There was

twitching of the muscles of the face, arms, The knee-jerks were exagand legs. gerated. He would not take the breast, but would occasionally swallow fluid administered with a dropper. There were no evidences of hemorrhages into the skin or elsewhere. Lumbar puncture showed increased pressure, and one-half ounce of bright-red fluid was withdrawn, which contained 5,-100,000 red cells, 2400 leucocytes, and 90 per cent hemoglobin. The specimen appeared to be pure blood and would not coagulate. The bulging of the fontanels disappeared at the time of the puncture, but returned fifteen minutes later. Sixty hours after the onset of the first symptoms treatment by normal human blood serum was begun. During this time the condition of the child became progressively worse, so that during the last twenty-four hours he could not be aroused at all, ceased to swallow, and the lack of nourishment and loss of fluid gave him the atrophic appearance of athrepsia.

He was not weighed on account of his poor condition. At this time 30 Cc. of serum was given subcutaneously; six hours later 30 Cc. more. After the second dose the child began to show improvement. He appeared brighter and was able to nurse, and the muscular twitching was less marked. Sixty cubic centimeters more serum was given in this twenty-four hours, at the end of which time the twitching had ceased entirely and he was nursing regularly every two hours. At the end of the second twenty-four hours the fontanels were still bulging and another lumbar puncture was done, drawing off one-half ounce of blood-tinged spinal fluid, showing that active hemorrhage had ceased. Serum administration was continued for five days, the amount being diminished each day. In seven days this baby received a total of six hundred and thirty cubic centimeters administered in twenty-three doses. Improvement was continuous. fourth week he had regained his original birth weight. At two months he weighed 8 pounds 8 ounces; at three months 12 pounds; at four months 15 pounds.

four months he appeared to be a normal child, having no spasticity; he held his head up, was able to hold objects in his hands, smiled upon provocation, and did not show signs of mental insufficiency. To-day he is a normal baby one year and six months old.

B. A., the third child, a male, five and one-half years old, had always been very healthy until the present trouble. One afternoon he received a slight blow on the abdomen from the handle of his bicycle. Following this there was a very large hemorrhage under the skin. A few days later he fell ill with tonsillitis, which lasted four or five days. While convalescing from this attack he had frequent hemorrhages from the nose and some oozing from the gums. About ten days later, on July 10, the epistaxis was very marked; the child vomited a large quantity of blood and passed large bloody stools. The epistaxis and bleeding from the gums continued throughout the 11th. On the morning of July 12 a large quantity of blood was again vomited and many bloody stools passed. On the morning of the 13th again vomiting of blood and bloody stools. At this time I was called to see the child and found him very pale, tossing about the bed with air hunger, and so pale the lips were of a color indistinguishable from that of the skin sur-The temperature at this time was 103°, pulse 140, respiration 48. Between 12 o'clock noon and 12 o'clock midnight the child received 240 Cc. of normal human blood serum. July 14 there was a very slight hemorrhage from the nose, and some disintegrated blood passed in the stools. After this there was no more bleeding. The serum injections were continued, however, for five days, at the end of which time a total of 1034 Cc. had been administered hypodermically. After this the child made a slow but steady recovery to its normal condition.

L. M., male child, aged ten years. His mother was subject to severe and almost uncontrollable hemorrhages. Patient himself in the past had been subject to prolonged and almost uncontrollable hemorrhages

from slight wounds. He was admitted to the Fordham Hospital after having fallen and punctured two wounds in the anterior part of the tongue with his teeth. On admission the tongue was swollen and black, and was bleeding steadily from two small puncture wounds near the tip. For the first twenty-four hours he was given calcium lactate gr. 10 q. 4 h., and adrenalin solution to the tongue on cotton in the form of a wet dressing. Bleeding was continu-Peroxide of hydrogen was applied locally as a wet dressing; bleeding continued. Next day vomited a large clot of blood. Compresses of gelatin solution were applied locally and changed every hour through the night; bleeding continued. Treatment with gelatin, adrenalin, peroxide, and gr. 10 calcium lactate q. 4 h. was continued for four days without the slightest effect. On the fifth day a local dressing of fresh beef serum was made and changed frequently without the slightest effect. On the sixth day one ounce of normal human blood serum was injected subcutaneously. The hemorrhage stopped within four hours after the serum injection and did not return again. The boy was discharged on the fourteenth day very anemic, but with no tendency to hemorrhages.

I. J. G., whom I saw in consultation with Dr. Dowd, was a young man twenty-nine years of age. His family and personal history were negative. It was noted by his family and friends that he was always very pale but perfectly well nourished and healthy. Without warning his nose began to bleed and could not be stopped. After he had bled about a pint, according to the family estimate, Dr. Dowd was called. nose was packed very tightly from both front and back, but without effect, as the blood lampwicked through the packing and continued to drip. The packing was removed several times and replaced tighter each time, but still without effect. The hemorrhage reduced his hemoglobin to 65 per cent and red blood cells to 2,000,000. On the fourth day I began injections of normal human blood serum, and within thirty-six hours the bleeding had stopped and did not return.

The underlying condition in these bleeding cases I believe has to do with the endothelium lining the blood-vessels, and I think a disturbance in the balance of the ferments of these cells is the immediate cause of the This disturbance I believe hemorrhages. to be due to malnutrition. The malnutrition may be caused in different ways, but in the end has the same result. In the bleeding babies we find marked putrefaction, hypersecretion of mucus, and malodors indicative of marked decomposition in the colon. This decomposition is accompanied by the production of toxins, which are absorbed and interfere with the nutrition of the endothelium, possibly by producing a cloudy swelling, and thereby upset the balance normally maintained between the ferments and antiferments of these cells. In a very recent case of hemorrhage in the new-born a foul odor, identical with that of the stool, was exhaled from the general skin surface. Hemorrhages so commonly reported in specific babies can be accounted for in this way, and also those occurring in individuals having a bacteremia. toxins of these various conditions are equal-·ly capable of destroying the normal equilibrium of the endothelium.

A long list of observations have descended to us from the literature which seem to have well established that these hemorrhages are due to some abnormal condition of the blood itself, that it is a blood disease. The main facts in support of this conclusion are the delayed coagulation time of the blood and what appears to be a hereditary tendency. In an article entitled "The Relation of the Blood Platelets to Hemorrhagic Disease," Dr. W. W. Duke has pointed out that there is a marked diminution of the blood plates in these hemorrhagic conditions, and that when these are supplied by transfusion of blood the bleeding stops for a time, but with the reduction of these elements again the hemorrhages will recur. The blood plates have been demonstrated to be the nuclei about which thrombi form, as they produce a ferment substance which is concerned in the formation of fibrin. Such thrombi we find, of course, as hemostatic agents, instrumental in stopping hemorrhage due to blood-vessel injury.

. The blood of some of the bleeding cases has a normal coagulation time, but the greater number have the coagulation time prolonged, and in some instances decomposition takes place without clotting having occurred.

When normal serum, from whatever source, is added to the blood of any of these cases which have a much prolonged coagulation time, it will cause a prompt clotting. From this fact it has been reasoned that there is lacking in the blood of these individuals a kinase, or activating substance which would normally cause coagulation. If this were true we should expect to find a coagulation of the blood in the hemorrhagic areas in those cases in which the hemorrhages have been controlled by the use of serum, but this is not the case. Clotting in the tissues does not occur after the use of normal human blood serum. hemorrhage is stopped through some other process than that of coagulation, and the blood of existing hemorrhages is absorbed without having formed clots. The effect of normal human blood serum in controlling these hemorrhages seems to be through its nutritional effect, especially upon the endothelium lining the blood-vessels.

These hemorrhages usually occur after some special disturbance of nutrition. This disturbance may be more or less chronic, with considerable wasting away of the general tissues before the hemorrhage begins. In other cases it seems to be more acute and a condition of toxemia or septicemia. In the first instance it appears to be a species of autointoxication, originating in the excessive growth of pathogenic bacteria in the intestinal tract with the absorption of large quantities of toxins; in the second instance a septicemia, with a growth of bacteria in the blood stream which produces a profound systemic poisoning. All of these

conditions have the same general effect upon the nutrition of the endothelial lining of the blood-vessels. This disturbance operates to upset the balance normally maintained between the ferments and antiferments native in the cells, thereby producing conditions leading to hemorrhage. normal human serum is a prepared food having molecules with receptors which fit the receptors of the cells of the endothelium, according to the side-chain theory of Ehrlich, which in that way is capable of being incorporated into the cell body as nourishment without any energy being wasted in the process of digestion. The nutrition being thus easily restored, the balance of ferments is reestablished and the hemorrhages stopped.

In septic conditions normal human blood serum appears to have considerable value. I have injected four individuals having bacteremia, from the blood of whom the streptococcus was obtained by culture. Two of these individuals recovered and two died. Two cases of very grave peritonitis have also received these injections. first, a postoperative case, on which a panhysterectomy had been done, showed marked signs of acute peritonitis on the day following the operation. Beside high fever, rapid pulse, marked abdominal tenderness and distention, she had from the second day uncontrollable vomiting. She was unable to take any nourishment whatever and was rapidly sinking. Injections of normal human blood serum in doses of 5 to 7 ounces were given daily. After the second dose was administered she showed decided improvement, in that the vomiting ceased, she was able to take liquid by mouth, the temperature receded, and the abdominal condition quickly cleared up.

The second case, a girl nineteen years old, curetted after abortion, ran a high temperature between 103° and 104°, with rapid pulse, shallow rapid respirations, distended tender abdomen, flushed cheeks, and dry mouth. This girl was considered to be in a hopeless condition when injections of human serum were begun. Over a period of

five days the serum was administered to the amount of three hundred cubic centimeters. The serum caused a decided improvement, and the patient returned slowly to her normal health.

The injections of human serum I have made in meningitis caused by the staphylococcus, streptococcus, and pneumococcus have proven of no value, possibly because these cases have been so far advanced in the degenerative processes caused in the parenchymatous organs by the bacterial toxins that recovery was impossible, though the bacteria may have been killed or their toxin neutralized.

There is a possible explanation for the beneficial action of normal human serum in septic conditions. Lack of resistance on the part of the individual to organisms may be due to one or two factors. The individual may have the ability to produce sufficient antibody, but have a deficiency in the complement content of his serum. Again, he may have sufficient complement but lack the ability to form antibody. In the first instance the complement would be supplied by the normal serum injections; in the second no benefit would be derived because the normal antibody in any given serum is a negligible quantity. The second class should be benefited by the administration of an appropriate antiserum, produced specifically against the infecting organism. I believe we are approaching methods by which we can fairly accurately determine which element is lacking in the blood of septic persons, and it will not be in the very distant future when we shall be able to direct much more intelligent treatment in any given case.

Injections of normal human serum have proven of value in controlling hemorrhage which occurs after operation on deeply jaundiced persons. In coöperation with Dr. Willy Meyer I have made injections in such conditions with good results. Dr. Meyer has reported this work in the *Journal of Surgery, Gynecology and Obstetrics* for August, 1911.

In passing, just a word in regard to the

injection of defibrinated blood which is advocated by some who have used it. Experiments made by Ehrlich have demonstrated that the red blood cells injected into the same species call forth a hemolytic body for their digestion and removal, which he calls isolysin. In the formation of the isolysins a certain amount of cellular energy is consumed in their production which is just so much extra tax on the individual's capacity for general resistance. The serum is so easily obtained that I can see no reason for using whole blood, especially in babies, thereby possibly reducing the strength of the child, already at its lowest ebb.

Transfusion, which has been so much employed, is of value, but it is accompanied by certain dangers. Hemolysis, thrombosis, and embolism, all or any of which may lead to the death of the patient, are to be feared. It is true that these are not very frequent occurrences, but still they are common

enough to make one hesitate before using transfusion if some other efficacious remedy can be employed. The disadvantages of transfusion are, first, the difficulty of the operation, which is not so simple as many suppose; secondly, it is frequently necessary to use the method several times on the same subject, and in this it has certainly a great disadvantage, while on the other hand normal human blood serum can be repeated frequently and used indefinitely. I do not wish to disparage too much the use of transfusion, for I believe it has a field which no other agent or measure can replace. In cases of very marked depletion from prolonged hemorrhage in which the cellular elements of the blood are greatly diminished. I believe the only measure to use is transfusion, for in this operation we supply the cells necessary to the blood which are entirely lacking in any serum we may administer.

# INJURIES OF THE SHOULDER AND THEIR RELATION TO SOME CONDITIONS OF THE UPPER EXTREMITY OF OBSCURE ORIGIN (STIFF AND PAINFUL SHOULDERS, TRAUMATIC BRACHIAL PARALYSES, BRACHIAL BIRTH PALSIES, OCCUPATION PALSIES, RECURRENT AND OLD UNREDUCED DISLOCATIONS OF THE SHOULDER).1

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My time will not permit more than a brief summary here of deductions reached from work previously done and already reported. Of the conditions with which this paper is concerned, it may be said that the pathogenesis is particularly obscure in every instance, although there has been much discussion concerning them and many different theories have been offered. In addition to being obscure it may be also said that they all involve more or less the whole upper extremity, are always associated with some degree of palsy, in the early stages give pain which may persist for long periods, and almost always exhibit limitation of abduction and external rotation at the

shoulder-joint. It is my belief that they are all closely related to each other etiologically, and that we are dealing not so much with a variety of distinct pathological conditions as with different expressions of essentially the same pathological lesion.

Underlying the obscurity, in my opinion, is a failure to appreciate some important facts concerning the anatomy of the shoulder-joint and their relation to the most common accident in this region, forced abduction of the arm. I believe that it is to the shoulder what the forced dorsal flexure from a fall on the hand is to the wrist, and what the forced lateral twist of the foot is to the ankle. The most common accidents to the body are those resulting from falls on the hand. Man walking upright is in

<sup>&</sup>lt;sup>1</sup>Read before the Pennsylvania State Medical Society, at Harrisburgh, September, 1911.

constant danger of falling, and when he does so he employs his hands or hand to break the force of the fall—i.e., he sacrifices the less important extremities in favor of the more important head and trunk which contain the vital organs. I believe that when falling, if conscious, he reflexly and frequently unconsciously throws out the limb with the elbow in rigid extension and the palm facing the object against which he strikes; that he practically never strikes first on his shoulder or elbow. I believe also that when we appreciate the importance of this fact we shall begin to understand more clearly than we do now the mechanism of injuries to the shoulder and elbow. There is no question concerning the relation of the fall on the hand to fracture and sprains at the wrist, which are among the most common in the body. In connection with fractures and dislocations at the elbow it is very likely that we attach too much importance to falls on the elbow. But we are concerned now only with the shoulder, and although there are other common accidents which produce forced abduction at the shoulder, the fall on the hand is the most common and may, therefore, be used as a good example.

The shoulder-joint is one of the most vulnerable in the body, as shown by the frequency of dislocations here. When a force applied to a bone is sufficiently severe the result is a fracture; when to a joint the result is a tearing of the ligaments with or without a dislocation. In the latter case. whether there occurs a dislocation or merely a sprain (after the reduction of the dislocation), the joint lesion is the same except as to degree. It is generally recognized that forced abduction is the great cause of anterior dislocations of the shoulder and that almost all are anterior. But we have not recognized abduction as at all peculiar to injuries of the shoulder other than dislocations. The most common cause of forced abduction at the shoulder is the fall on the hand, the upper extremity being at such an angle with the ground at the moment of impact that it is carried away from the body. If the angle with the ground

is such that the arm is carried toward the body, the patient strikes immediately afterward on the arm and perhaps on the shoul-Whatever injury he sustains from such an accident, it will in all probability not be a dislocation or a sprain, because the trunk will prevent adduction beyond the physiological limit of the joint. When abduction is forced, however, there is nothing to resist it except muscles and ligaments, and when the normal limit is passed the capsular ligament always gives way on the axillary side of the joint. The ease with which the capsule is torn can be readily demonstrated on the cadaver. I have gone fully into this phase of the subject elsewhere, and I wish here merely to call attention to this capsule lesion, its mechanism, and the frequency with which it occurs. In my opinion, it is the underlying cause of the conditions with which this paper deals. The forced abduction may be due to getting off a street-car, throwing a baseball, grasping the limb of a tree in falling, pulling on the arm of a child during delivery, and many other such accidents. One fact stands out prominently in connection with these conditions: they are more commonly associated with dislocations of the shoulder than with any other definitely established traumatic condition. cases in which there is no history of a dislocation are associated with the same tear of the axillary portion of the capsule from forced abduction. Either there was a dislocation that was spontaneously reduced as the arm fell to the side of the body immediately after the fall, or the tear of the capsule was not extensive enough to permit the escape of the humeral head from the socket. Here then is a lesion which even in dislocations has received little attention, and in the other cases has not been considered.

The obscurity as to the cause is to be explained by several circumstances. In the first place is the failure to appreciate the frequency and the effect of forced abduction at the shoulder. Immediately after the forced abduction the arm falls by gravity to the side of the body, and when the patient recovers from the excitement of the

moment and finds his arm at his side, he too frequently concludes that it was in this position when he fell and that he struck on his shoulder. The seat of the lesion is deep in the axilla and further concealed by the fact that the patient persists in keeping the arm at his side because abduction causes severe pain. The pain, tenderness, and swelling soon become diffused, so that localization of the lesion by the clinical signs becomes difficult or impossible.

In the early stages there will be found severe pain on attempts at abduction and external rotation, because these movements more than any other drag on the torn portion of capsule and the surrounding inflamed tissues. Adduction and internal rotation relax them, so that we find the patient constantly favoring this, the position of rest. His physician does the same when he slings the wrist from the neck. As time goes on and the inflammatory process subsides, cicatricial contraction takes place and the limitation of abduction and external rotation tends to become permanent, except in so far as the patient stretches the contracted tissues by forcing the limited movements. The degree of this chronic limitation will depend upon the extent of the original laceration, the severity of the inflammation which it caused, the efforts which have been made to stretch the contracted tissues, and the stage at which the forced movements were begun. It may persist throughout life, but even in the oldest cases it can be overcome. Under a general anesthetic the contracted capsule can be torn, the arm forced into full abduction and maintained in this position by a splint and bandages, but preferably with a plaster cast, for several weeks. The arm may then be allowed to come down to the side of the body, after which suitable exercises and massage will be in order to preserve the motion thus obtained and to improve the atrophied muscles. I have done this repeatedly with excellent results in every case. If begun early enough the forced movements and massage will be sufficient without tearing the capsule under an anesthetic.

The pain in these cases will vary according to the extent of the lesion, the stage at which the case is observed, and the degree of involvement of the nerves by the inflammation in the axilla. In the early stages it is diffused about the whole shoulder, but later is frequently referred to definite points in the shoulder region, in the arm more particularly at the insertion of the deltoid, and not infrequently is referred to the forearm and hand. It would seem that the nerves most involved in the adhesions are responsible for the character of the referred pain.

The pain and limitation of movement have been accounted for by several writers, more particularly Codman, by the existence of an inflammation in the subacromial bursa, the condition becoming chronic on the development of adhesions between the bursal surfaces. Codman¹ offers no explanation for the associated loss of power in the muscles of the arm, although he says that "in some cases these secondary changes in the nerves and muscles almost amount to a real paralysis and simulate lesions of the brachial plexus or progressive muscular atrophy." When I was preparing my first paper<sup>2</sup> on this subject I could find nothing in the literature that combated the bursitis theory, of which Codman was the chief exponent. In trying to establish the capsule theory it became necessary to combat the prevailing one, and my efforts were directed chiefly against Codman's evidence. Indeed, I believe that I am safe in saying that the only evidence upon which the bursitis theory can be justified is that of Codman. It is of such a character that it must be reckoned with. He has very recently published a paper<sup>8</sup> of considerable length which is given up entirely to the answering of my criticisms of his support of the bursitis theory, and this he does with admirable fairness. He thinks that the capsule theory will explain some of the cases, but that most of them are due to an inflammation in the subacromial bursa. He says that some one else may later show that both of us are wrong. I believe that I am prepared to

<sup>&</sup>lt;sup>1</sup>Boston Medical and Surgical Journal, 1906.. <sup>2</sup>American Journal of the Medical Sciences, April, 1911. <sup>8</sup>Boston Medical and Surgical Journal, August, 1911.

sustain convincingly the theory which I am offering, but must leave that to another time. My chief objection to the bursitis theory is that it allows too much to remain unanswered.

More troublesome than the pain, because more permanent and disabling, is the more or less severe palsy of the limb which is always associated. It tends toward very slow improvement, frequently lasts several years, and may be permanent. The most generally accepted view at the present time is that these paralyses are the result of injuries to the brachial plexus or its roots. It was at first thought, in connection with those following dislocations of the shoulder. that the paralysis was due to an injury of branches of the plexus in the axilla, by the humeral head; but this theory was abandoned because the muscles affected were too widely distributed to be accounted for by an injury to a few nerves. I believe that it is due to the involvement of some or all of the branches of the plexus in the axillary inflammation which follows the laceration of the capsule. The torn blood and lymph vessels and the joint fluid escaping through the rent in the capsule infiltrate extensively the loose axillary tissues, surrounding and invading the nerves themselves. The early impairment of the function of the nerves by the neuritis and pressure of the surrounding inflamed tissues and the later involvement by adhesions and cicatricial contraction seem obvious. Improvement in the movements of the shoulder will be associated with a gradual disappearance of the paralysis. Except in one particular type I have never seen it fail, and I have seen about thirty cases. In connection with dislocations, the best collection of autopsy cases showing the condition of the nerves in the axilla that I have found is that of Delbet and Cauchoix. They showed that the nerves were not so much injured as enveloped in an area of inflammatory or cicatricial tissue, such as would follow the laceration of the axillary portion of the shoulder capsule.

I would group these cases under the

traumatic brachial paralyses of adults, because they are usually found in adults, who have attributed them to injuries of the shoulder region. In doing so, however, I have in mind only those cases in which the palsy is severe. They are among the cases which Codman ascribes to subacromial bursitis. According to my experience these paralvses fall into two distinct groups—those in which the humeral head is maintained at its normal level under the acromion, and those in which the muscles and ligaments are relaxed and the humeral head falls an appreciable distance below the acromion. tips of the fingers can be pressed into a hollow between the acromion and humeral head, which can be raised easily to its normal level by pressure under the elbow, but falls again when this support is removed. I have found no attempt in the literature to differentiate as to cause between these cases, although the distinction is, in my opinion, exceedingly important. They have all been ascribed to injuries of the brachial plexus, but why the paralysis is associated with relaxation of the shoulder-joint in the few and not in the many has never been explained, so far as my investigations have gone. The distinction as to prognosis is of the greatest importance. Those cases in which the joint relations are normal tend toward recovery, those in which the joint is flail do not. The movements and power of the hand and forearm may improve, but about the shoulder the condition gradually grows worse. I have seen one case in a young man, twenty-one years of age, who had his injury when one year old. atrophy was so marked that the upper end of the humerus was almost subcutaneous. I have had two cases upon which I operated, one five weeks and the other eight weeks after the accident, the operation being based upon the theory as to cause which I shall offer, with practically complete recovery of motion and power in both.

In my opinion these flaccid shoulderjoints are not due to paralysis from injuries to the brachial plexus, but to anterior dislocations of the shoulder in which not only the axillary portion of the capsule is torn,

<sup>&</sup>lt;sup>1</sup>Revue de Chirurgie, 1910, xxx, 678.

but the usually untorn upper and posterior portion also gives way. The external rotator muscles overlying this portion of the capsule and having their insertion into the greater tuberosity may be torn also or the tuberosity may be detached, but the tearing of this upper and posterior portion of the capsule alone may be responsible for the condition. This loss of support allows the whole extremity to fall away from the glenoid cavity from a half to three-quarters of an inch, with an abnormal tension on the nerves sufficient to account for the paralysis. It is likely that the blood-vessels and the muscles suffer also from the tension. The operation which I did was merely to restore the normal joint relations by shortening the upper and posterior portion of the capsule in one case and the capsule and overlying external rotator muscles in another. I have shortened the capsule alone in two other cases recently, and they are making satisfactory progress up to the present time. I believe that my two recoveries are the only two on record, and that they alone prove the theory. The progress made by the two more recent cases corroborates it. I have offered other evidence, but cannot repeat it now.1 .

It has long been recognized that the brachial birth palsies are of the same type as those occurring in adults from injuries of the shoulder, and here again the generally accepted theory is that they are due to injuries of the brachial plexus at delivery. My knowledge of these cases is obtained from observations on three cases and a study of the literature. I believe that like the adult cases they are due to injuries of the shoulder-joint, not of the brachial plexus, but I shall not attempt to discuss the question here. I have found the typical limitation of abduction and external rotation, and believe that it is always present in the early stages, although it may disappear later. The paralysis is much more severe in children, probably because of the immature condition of the nerves and muscles and of the lessened tendency of the child to

force the limited movements. I find also that the only known traumatic condition with which these cases are associated is the dislocation of the shoulder, and this association is frequent. Essentially the same kind of palsy is associated with congenital dislocations of the shoulder. I find also that these obstetrical palsies consist of the same two groups of cases as in the adultthose in which the joint relations are normal and those with flaccid shoulder-joints. Moreover, as in the adult, the flaccid joint type is relatively much less common than the other. The important point here is that if the cause is the same in both, then the flaccid joints, or paralytic dislocation of the shoulder developing at birth, can be cured by restoring the normal joint relations just as the adult cases were cured. Thus far I have not operated on such a case. harm is to be expected from merely restoring the normal joint relations, and I am hopeful that much can be accomplished by it.

What appears to me to be the same condition as occurs in the flaccid joint type of obstetrical palsy is credited to anterior poliomyelitis, and I have raised the question as to whether the latter cases may not be due to an overlooked trauma of the shoulderjoint like the others. This suggestion is so radical that some reasons should be offered for it. My investigations have seemed to show that in these cases the paralysis is always confined to the extremity in which the flaccid shoulder-joint is located. If poliomyelitis causes it, then the cases ought to be common in which other parts of the body are also paralyzed. I have reported two of Dr. J. W. McConnell's cases, in which the muscles about the shoulder were paralyzed more extensively than in the flaccid joint cases ascribed to poliomyelitis, as well as muscles in the other extremities. Yet in these two there was decidedly no relaxation of the shoulder-joint, and the humeral heads were held up snugly at their normal levels under the acromion. I have found several text-book illustrations of similar cases, which seemed to show that there was no relaxation of the shoulder-joint in

<sup>&</sup>lt;sup>1</sup>Journal of Nervous and Mental Diseases, April, 1911, p. 193.

them. Of 2500 cases collected from the New York epidemic of poliomyelitis in 1907, although the symptomatology was particularly detailed, there was no mention of a flail shoulder-joint or paralytic dislocation in connection with any. When a cadaver is maintained in the upright position with the arms hanging at the side, while occasionally there is a slight drop of the humeral head, but not nearly as much as in these cases of paralytic dislocations, in most bodies that I examined the humeral head was held up snugly under the acromion. If paralysis alone were the cause of the relaxation, it ought to be marked in the dead body. I have mentioned these facts merely to justify the raising of the question as to whether there is not some other factor than paralysis to account for the falling of the humerus. If poliomyelitis alone can cause it, there will be no necessity for entertaining my suggestion long, since the opportunities for disproving it are abundant. On the other hand, the operation of fixing the humeral head at its normal level is not at all serious, and if it accomplishes nothing else it will at least place the joint surfaces in their normal relations to each other, so that any unparalyzed muscle fibers may act to better advantage. The loss of balance in the actions of the surrounding muscles from the displacement in a flaccid joint is probably a serious factor in disturbing their functions. If the operation were followed by a disappearance of the paralysis as in my adult cases, then it would be proven that the case operated on was not due to poliomyelitis. I have operated on one such case, but twelve weeks later it was found that the relaxation had partially recurred. In the meantime the paralysis had so improved as to satisfy my mind that it was not a case of poliomyelitis, although this diagnosis had been made by a wellknown neurologist. At the end of twelve weeks I operated a second time. The healing was perfect after both operations, but after the second the patient developed pneumonia and died. This may, however, follow any operation. It should be stated here that no theory has ever been offered which

satisfactorily explains those cases, except that based upon a supposed poliomyelitis.

I feel justified in suggesting that many of the so-called occupation palsies, like writer's palsy, may be due to overlooked capsule tears at the shoulder. There exists now considerable evidence to show that they are frequently traumatic in origin. It has also been shown that they are frequently associated with considerable pain about the shoulder and arm. If it could be shown that in the early stages they exhibit limitation of abduction and external rotation at the shoulder, pain about the shoulder and arm, in addition to the palsy which suggested the diagnosis, the condition could in my opinion be fairly attributed to a laceration of the capsule of the shoulder-joint. I have reported a case in which, following an accident, there was pain about the shoulder, and down the arm and forearm to the hand, marked weakness of the muscles (the most noticeable sign of which was the dropping from the hand, unconsciously, of such objects as a drinking-glass), tenderness in the axilla, and ten weeks after the accident the characteristic limitation of abduction and external rotation. The patient was a graduate nurse, and her chief complaint was that she could no longer perform massage movements, upon which her livelihood depended. Although she had had much experience with similar conditions at the shoulder, she had not suspected a causal relationship between the shoulder condition and the disabling palsy in the hand and forearm. Schulz reported the late results in a large series of uncomplicated dislocations of the shoulder, in which long after the dislocation and reduction the weakness in the hand and forearm was frequently of such a character that the patient could not follow his usual occupation. The disturbances in the hand are so serious that they distract attention from the shoulder-joint condition (in the absence of a dislocation), so that the causative relationship is frequently overlooked. I would advise that in occupation palsies with a traumatic origin the shoulder be examined for limitation of abduction and external rotation.

In recurrent dislocations of the shoulder,1 before the margins of the rent in the capsule produced by the original dislocation had healed with sufficient firmness, the arm was carried too far into abduction and the humeral head brought to bear too strongly against this portion of capsule, now too weak to retain the head in the glenoid cavity. As a result the dislocation again takes place, the margins of the rent are once more forced apart, and the plastic reparative material is stretched between The efforts at repair having been partially spent they cannot now reunite the margins as firmly as if they had been undisturbed. After another short period the same accident recurs, again the margins of the rent are forced apart, so that finally the healing process is completed with a new cicatricial portion of capsule bridging the gap between the separated margins of the rent. In a normal joint when abduction takes place the axillary portion of the capsule tightens up and restrains the humeral head from leaving the glenoid cavity. With a lengthened capsule this support is lost and more or less frequent recurrences result. If this portion of capsule is exposed and properly shortened as by overlapping, the dislocations will not recur. I have operated on eleven cases. In one the dislocations recurred and became more frequent than before the operation. A second operation, done since the reading of this paper. showed that the recurrences were now subluxations, due to the presence in the humeral head of a large defect. However, the occurrence of violent epileptic convulsions soon after the operation, and before the repaired capsule had properly healed, was probably chiefly responsible for the recurrence of the condition. In another case, from violent abduction on one occasion and external rotation on another, there occurred a slight subluxation with immediate re-But this patient swims a great deal, chins himself easily on the horizontal bar, and uses his arm freely in many ways without fear or further trouble. The operation was performed twenty-one months ago, and the last subluxation was more than a year ago, so that the case should be regarded as a success.

In both of these patients an effort was made to shorten the capsule to just within the normal, in order to shorten the convalescence. The immediate effect of the operation is to produce the conditions that follow every dislocation of the shoulder properly treated. It is essentially the same condition which Codman ascribes to subacromial bursitis, and which I have ascribed to a laceration of the axillary portion of the shoulder capsule. The healing of the capsule tear with the arm in adduction and internal rotation, the sling position, must tend to fix it there. But if vigorous movements are begun after about four weeks, before the cicatricial tissue becomes too unyielding, and are kept up long enough, full motion and power will return and all pain disappear. This has been my experience after the operation for recurrent dislocations. If immediately after the reduction of the original traumatic dislocation the patient forces the arm rapidly into full abduction and external rotation, he will frequently escape the troubles of a stiff and painful shoulder. but this is the most fruitful cause of recurrent dislocations.

We are all familiar with the great difficulties in the reduction of old unreduced dislocations of the shoulder, and the growing tendency to operate on them early. Unfortunately direct exposure of the joint has not helped greatly in accomplishing the reduction, so that in many instances the operation has been concluded without reduction, and by many surgeons excision of the humeral head is regarded as the best pro-We have never succeeded in establishing the particular anatomical obstacle to reduction. It has been my opinion for some time that it is associated with the changes going on about the humeral head at the site of the rent in the capsule. It is my purpose to report more fully in the near future concerning my experience with this condition. With this theory as a working basis, I have had considerable suc-

<sup>&</sup>lt;sup>1</sup>American Journal of the Medical Sciences, February and March, 1909, and Journal of the American Medical Association, March 12, 1910.

cess with the old method of reduction by traction on the abducted arm and fixation of the scapula. The old rule was not to attempt reduction after three months. The present tendency is to operate much earlier. I have performed reduction in one case after four months, in another after eight months in which an effort made at three months had failed, and in a third after eight weeks in which there was a fracture of the lower third of the humerus. I attempted one after four years, but failed.

I believe that I failed in this case not because of the time which had elapsed since the accident, but because there was lodged in the glenoid cavity something which had fallen into the socket and had become adherent there, after the head had been displaced. I am confident that I repeatedly brought the head into the socket, and that in most cases there will be no such obstacle, and if the head is placed in the glenoid cavity and the arm brought to the side of the body, the head will stay in the socket.

### THE FACTORS CONCERNED IN THE PROCESS OF THE CLOTTING OF BLOOD.

BY W. H. HOWELL, M.D., LL.D.,

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The great number of investigations that have appeared during the last fifty years upon the subject of the coagulation of blood have given us numerous interesting and important facts, numerous theories, and a confusing nomenclature, but there is no doubt that the process in its entirety is far from being completely understood at the present time. One may justly claim perhaps that it has been demonstrated that the last stage in the process consists in a reaction between fibrinogen and thrombin, and that as a result of this reaction fibrin is formed and deposited. The main difficulty that confronts us is to explain the origin of the thrombin. It is admitted quite generally that the thrombin exists in the circulating blood in an inactive form, designated usually as prothrombin, and that the initial stages in coagulation consist in the processes which convert this inactive prothrombin to active thrombin. From the many studies upon this point it has become evident that two equally important factors are concerned in this activation. In the first place calcium is required. If the calcium contained in the blood is precipitated, for example, by the addition of oxalate solutions, the prothrombin remains in its inactive form and the blood does not clot. While this fact is simple and clear we have no accurate knowledge of how the calcium acts in normal clotting. It is, however, a most significant and suggestive fact that the reagents which precipitate or fix the calcium of the blood-plasma at the same time preserve the blood-plates from disintegrating, and it would seem that there must be some causal connection in shed blood between the presence of the ionized calcium and the breaking up of the platelets.

The second factor concerned in the activation of the prothrombin is the presence of a substance of unknown nature which is found in most if not all of the tissue cells, including the cellular elements of the blood. This substance has been designated by various names, such as zymoplastic substance, thromboplastic substance, etc. At first it was supposed simply to facilitate the process of activation of prothrombin, but it may now be said that this substance is essential to the process.

In the lower vertebrates—birds, reptiles, fishes—it is known that the blood withdrawn carefully from the vessels so as not to come into contact with the tissues, and then centrifugalized promptly to remove its own corpuscles, yields a plasma which either clots with great slowness or does not clot at all. When such animals are wounded the blood flows out over the tissues, and under these conditions it clots firmly in a few minutes. Even in the mammals, including man, blood removed carefully from the vessels by means of a clean cannula or

syringe clots much more slowly than blood that comes into contact with the wounded tissues. We are in fact justified in saving that unless the blood receives some of this thromboplastic substance either from its own corpuscles (plates, especially) or from the external tissues it will not clot under ordinary conditions. The way in which these two fatcors cooperate in activating the prothrombin is explained quite satisfactorily by a hypothesis first clearly stated by Morawitz. According to this hypothesis the thromboplastic substance is an organic activator or kinase (thrombokinase). In combination with the calcium it activates the prothrombin, but neither factor alone is sufficient to effect this change in the prothrombin. In the circulating blood, according to this theory, there are present fibrinogen, prothrombin, and calcium, but the kinase is lacking and is furnished after shedding either by the disintegration of the blood-plates (mammals) or by the external tissues (vertebrates below the mammals), or by both. On account of its simplicity and logical completeness this theory has been accepted quite generally, but as the result of investigations that I have been making I am obliged to dissent from it. The theory is unsatisfactory in two points: first, it does not take sufficient account of the presence of an antithrombin in the blood. and secondly, no adequate experimental proof has been furnished to show that the substance yielded by the tissues really acts as a kinase or organic activator to the prothrombin. I wish to present an alternative theory which seems to me to be better supported by experimental evidence, and which if correct, or if more nearly correct than the hypothesis of Morawitz, will make a decided difference in our investigations of the causal conditions in the hemorrhagic diseases.

This alternative theory rests upon two facts: First, the presence in the circulating blood of a constant amount of antithrombin; secondly, the proof that this antithrombin is antagonized or neutralized by the thromboplastic substance (thromboplastin)

found in tissue extracts. By antithrombin we mean a substance which acts as an antibody to thrombin. In some way, probably by combining with the thrombin, it prevents the latter from reacting with fibrinogen to form fibrin.

An antithrombin has been isolated in pure form, or approximately pure form, from the salivary glands of the leech, and is for sale under the name of hirudin. It is a soluble protein of comparatively simple composition, resembling the peptones and proteoses. A similar substance has been shown to exist in blood-plasma. I have been able to obtain undoubted evidence of this latter fact by a simple procedure. By a method which I have described elsewhere I have been able to isolate thrombin in a pure or approximately pure form. If a solution of this pure thrombin is added to a solution of pure fibrinogen a typical clot will form in a few minutes. If to such a mixture one adds a little hirudin the process of clotting is delayed or is prevented altogether, according to the amount of hirudin used. Instead of hirudin one may employ blood-plasmas and obtain a similar result. The procedure is as follows:

The blood to be examined is caught in a one-per-cent solution of sodium oxalate solution. The blood thus rendered incoagulable is centrifugalized and the clear plasma is pipetted off. The plasma is then heated in a water-bath to 60° C. to precipitate its fibrinogen (and prothrombin) and is filtered. After cooling one adds one or more drops of this plasma to a given solution of thrombin, allows the mixture to stand for ten minutes, and then adds the fibrinogen. According to the quantities used the heated plasma retards or prevents entirely the action of the thrombin or the fibrinogen. If the plasma which is being tested for antithrombin is heated to about 85° and filtered it will be found that its restraining effect upon the thrombin is no longer exhibited. By comparative experiments of this kind it may be shown that the amount of antithrombin present in birds' blood-plasma is considerably greater than that in mammalian plasma, and that the amount present in the blood-plasma of the lower mammals (dog, cat) is greater than that in human blood. In so-called pertonized dog's blood the amount of antithrombin present may be relatively enormous, and sufficient to neutralize large amounts of thrombin. If antithrombin is a constant constituent of blood one may assume that it plays an important rôle in maintaining the normal fluidity of this liquid. There is in fact considerable evidence that the body possesses means by which it maintains constantly a certain excess of this antithrombin, but an excess which is kept within a certain low limit. If, for example, one injects into the circulation a solution of pure thrombin or even a large amount of blood serum rich in thrombin there is no intravascular clotting, as one might have anticipated. On the contrary, so far as the thrombin solutions are concerned at least, the blood shows a delayed coagulation, for the reason that the excess of thrombin has stimulated the body (the liver) to secrete a corresponding excess of antithrombin. On the other hand, if one iniects into the circulation a large excess of antithrombin, hirudin for instance, the blood may show a delayed coagulation for a short time, but soon the excess of antithrombin is destroyed or removed and the normal balance is restored. One may imagine in fact that some thrombin is being formed continually in the blood, but that it acts as a hormone to stimulate the liver to produce a corresponding excess of antithrombin, or possibly the prothrombin itself may have a similar action.

If we grant that the antithrombin does maintain or help to maintain the fluidity of the circulating blood, why is it, we may ask, that soon after the blood is shed this action disappears and clotting occurs? The answer to this question is to be found, I believe, in the action of the thromboplastic substance furnished by the tissues, including, it will be remembered, the material of this kind derived from the disintegrating platelets.

I have carried out a series of experiments,

the details of which have been published in a recent number of the American Journal of Physiology, vol. xxix, p. 187, which seem to me to demonstrate clearly that the thromboplastic substance in tissues, or thromboplastin as we may designate it for convenience, neutralizes the effect of 'antithrombin. In these experiments mixtures were made of fibrinogen and thrombin, and enough antithrombin was added to retard or prevent coagulation. If to such a solution thromboplastin (tissue extracts) was added the effect of the antithrombin was neutralized and the clotting was made possible or the time necessary for the clotting was shortened. For example, to quote a short series, results of the following character were obtained in an experiment in which fibrinogen and thrombin constituted the coagulating solution, the antithrombin was a solution of hirudin of a concentration approximately of 1 to 40,000, and the thromboplastin (tissue extract) was a glycerin extract of thymus, diluted 1 to 3 with water:

#### THROMBOPLASTIN.

1. Fibrinogen, 8.5 Cc. Hirudin, 1 drop. Thromboplastin, 0.5 Cc. Thrombin, 5 drops.

Solution clotted in less than 1 hour.

 Fibrinogen, 0.5 Cc. Hirudin, 2 drops. Thromboplastin, 0.5 Cc. Thrombin, 5 drops.

Solution clotted in 3 hours.

#### CONTROLS.

Fibrinogen, 0.5 Cc.
 Hirudin, 1 drop.
 Glycerin and water (1-3), 0.5 Cc.
 Thrombin, 5 drops.

Solution clotted in 2 hours 15 mins.

 Fibrinogen, 0.5 Cc. Hirudin, 2 drops. Glycerin and water (1-3), 0.5 Cc. Thrombin, 5 drops.

Partial clot in solution after 6 hours, 30 mins.

In these experiments the accelerating influence upon coagulation caused by the thromboplastic extracts could not be explained on the hypothesis suggested by Morawitz, namely, that they acted as a kinase to assist the calcium in activating prothrombin. The thrombin was added in ac-

tive form and the solutions contained no calcium. There seems to be no way of explaining the action of the thromboplastin except by admitting that it neutralizes the antithrombin. If this conclusion is admitted then the whole kinase conception as advocated by Morawitz falls to the ground, and the well-known and important, indeed essential, influence of the tissue extracts in normal coagulation must be explained not on the supposition that they aid in the activation of the prothrombin, but on the view that they antagonize or neutralize the antithrombin. We may believe that circulating blood contains normally all the necessary factors for coagulation, namely, the fibrinogen, the prothrombin, and the calcium, but these factors are prevented from reactingthat is to say, the calcium is prevented from activating the prothrombin—by the presence of antithrombin, which is also a constant constituent of the circulating blood. When the blood is shed this antithrombin is neutralized by the thromboplastic substance furnished by the wounded tissues, in the case of the lower vertebrates, or by the wounded tissues and the disintegrating platelets in the case of the mammals.

This point of view emphasizes greatly

the importance of the antithrombin in the blood and suggests the probability that variations in the time of coagulation may depend upon the greater or less amount of this substance in the blood. Influenced by this consideration the writer is making a systematic study of the relative amounts of antithrombin in normal blood under varying conditions and in the blood of the so-called hemorrhagic diseases. It seems most desirable that in these latter diseases all the fibrin factors should be studied in a quantitative way. This can be done without difficulty for the fibrinogen, the calcium, and, by the method that I am using, for the antithrombin. For the prothrombin, however, no available method has been devised. Perhaps all that we know about this particular factor is that it can be obtained from the blood-plates, and presumably therefore a marked loss of plates in the blood may be associated with a deficiency in this factor. Only by means of such studies will we be able to analyze successfully the causal factors concerned in the production of the various hemorrhagic conditions, so far as these causal factors are dependent upon changes in the blood itself.

# THE SUPPLEMENTARY HOME TREATMENT OF SEPTIC WOUNDS IN DISPENSARY WORK.

BY S. W. MOORHEAD, M.D.,

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The dressing of wounds once in twenty-four to forty-eight hours or even longer is sufficiently often if they be aseptic, but in cases in which the wounds are infected, or in which incisions have been made to combat suppurative processes, dressings six times a week are too infrequent, and it becomes a problem in dispensary work, and to some extent in private practice as well, to secure dressings at sufficiently short intervals. In hospital practice dressings twice a day and on Sundays can be usually secured through coöperation of the internes, but the added work thus entailed

soon becomes a burden, and is rarely performed with enjoyment.

To obviate these difficulties I last year adopted the practice of having the patients change the dressings on their wounds at home, with the most satisfactory results. Doubtless superior results would have been forthcoming could all of the dressings have been performed by a physician, but even imperfectly performed as they were by persons often of the lowest grade of intelligence the improvement over the results previously obtained was startling.

Before beginning the experiment I was a

little skeptical as to the measure of success that would be attained, being fearful that the imperfect asepsis that must necessarily attend the home dressings would in many cases serve to discount the good results accruing from the more frequent changes. This fear has been found to have been without foundation. In no case was a wound rendered worse as a result of the home treatment, and while in some the improvement was less rapid than in others, yet at no time were results sufficiently discouraging to cause me to even consider the advisability of abandoning the method of treatment.

In deciding whether a given case should be told to change his dressings at home, or whether the older plan of having all dressings done at the dispensary should be followed, two factors were considered—the character of the wound and the mentality of the patient. If the wound was of such a nature that it might reasonably be supposed that in the course of twenty-four hours—that is, before the time for the next dispensary—pus would collect in such quantities that it would be present under pressure so that an extension of the process would ensue, or if the infection was already making rapid progress, and if the mentality of the patient was such that he could be expected to remember and carry out the simple directions given him, the case was deemed suitable for home treatment.

The dressings which the patients were directed to apply were always of the simplest nature possible. Bichloride of mercury, phenol nor any of the various other antiseptics were ever prescribed. Peroxide of hydrogen was never advised. Instead plain boiled water, or normal saline solution, or a solution of sodium chloride and sodium citrate, were employed as being at once harmless and inexpensive. The lastnamed solution was the one oftenest used. and was found particularly beneficial when a considerable degree of cellulitis was present. The patients were supplied with a mixture of the two salts, four parts of sodium chloride and one part of sodium

citrate, and were directed to dissolve two to three level teaspoonfuls in a glass of hot boiled water. This gave a solution of approximately four-per-cent sodium chloride and one-per-cent sodium citrate, such as has been recommended by Wright, the chloride being of hypertonic sodium strength, serving to cause a flow of serum from the tissues into the dressing, while the citrate prevented coagulation by precipitating the calcium salts. The exact strength of the solution seemed to make little difference; one patient mistook the directions and used a tablespoon instead of a teaspoon. and complained that the solution burned him so much that he was unable to keep his finger immersed for fifteen minutes as he had been instructed, but his sensory nerves were the only structures to suffer, the local condition being markedly improved.

Whenever the location of the wounds permitted, the patients were directed to place them directly in the solution, keeping the latter as hot as it could be borne, for ten to thirty minutes every three or four hours, removing as much of the pus before and after the treatment as could be done by very gentle pressure. After the soaking they were to dress the wounds with pieces of sterile gauze wet with the solution, the dressing being prepared prior to the bathing of the part. Small packages of sterile gauze and sterile gauze bandages were supplied by the hospital at cost.

It has been my desire in writing this article to illustrate to what a considerable extent it is possible to secure the cooperation of patients, even of those of the lowest class, in the care of their wounds. The advantages consist in a decrease in the amount of pain and a decrease in the destruction of tissue by virulent processes and in the time required for repair, and therefore a decrease in the number of return visits that it is necessary for these patients to make, with a consequent saving of the surgeon's time and of the hospital's surgical supplies. I have never known patients who were able to purchase the gauze, bandages, etc., required to complain of the added expense of the treatment. Instead they have been uniformly grateful for the added interest shown, and for the added comfort experienced from the more frequent changing of the dressing.

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# THE PRESENT POSITION OF SPINAL ANALGESIA.

In the Birmingham Medical Review of October 14, 1911, McCardie tells us that from an extensive review of all the literature available to the author on the subject he concludes that spinal analgesia is retrogressing in favor, and is generally only used when there are marked contraindications to inhalation anesthesia, and local anesthesia is not possible. The exceptions are surgeons who have had a special experience of the method in a large number of cases of the same kind. In Germany the method is being abandoned by 50 per cent of the surgeons who have used it.

The proportion of deaths, as one would expect from the conditions, is greater than in inhalation anesthesia.

The immediate dangers are at least as great. The after-effects not uncommonly are most severe, affect the nervous system, and on the average at least are as frequent as those following inhalation anesthesia. Many of them are most persistent and disastrous, though the author asserts that the English results are much better in this respect than the foreign.

In spinal analgesia the chief after-effects are headache, backache, and raised temperature. In inhalation anesthesia, vomiting.

The percentage of failures in the former is very high. An excessive dose, whether absolute or relative, as in the case of idiosyncrasy, is more immediately and hopelessly fatal than is one after ether or chloroform, because it cannot be antagonized by mechanical and eliminative means.

The diffusion of liquid in the spinal canal is very different from the diffusion of vapor in the lungs.

In the treatment of emergencies from spinal analgesia one does wrong whether one sets up or inverts the patient; in the one case he may die of syncope, and in the other of poisoning.

Keen says that the ideal anesthesia will abolish pain by abolishing consciousness, but without danger to life. Spinal analgesia, states Zachrisson in a review of the subject, does not fulfil either of these conditions.

The author places analgesia, as a method of preventing pain, between inhalation and local anesthesia. Generally speaking, he thinks it should only be used in certain selected cases.

## COMBATING EPIDEMIC DIPHTHERIA.

In the Johns Hopkins Hospital Bulletin for October, 1911, FORD describes how he fought diphtheria in that institution.

In buildings where the presence of animals or expensive apparatus likely to be injured by the vapor of formaldehyde prevented disinfection of the structure as a whole, the separate rooms were sealed up and fumigated by the Parke, Davis & Co. formanganate briquettes or by the Du Prey candles. These rooms were kept tightly closed for twenty-four hours, and then the floors and walls were washed with soap and water and with disinfectants.

No bacteriological tests were made to determine the efficiency of the fumigation. The necessity for rapid work precluded any satisfactory observations, and it was realized that no method of disinfection is perfect. It was decided to carry out as vigorously as possible those methods which are recognized to be of the greatest value and to trust to a wise Providence that the contagion would be destroyed. Afterwards, when more time was available, with Dr. Norton's help, a number of observations were made during the disinfection of Ward G. It was found that surface cultures or organisms like bacillus typhosus, bacillus coli, streptococcus pyogenes, and bacillus prodigiosus were killed when exposed to the gas generated by the Parke, Davis & Co. briquettes of formanganate. The organisms in the depths of the tubes remained viable, however.

#### EDITORIAL.

## AURICULAR FIBRILLATION AND ITS TREATMENT.

From time to time in the past we have expressed the opinion that many practitioners administer digitalis in too large doses, and have advocated the use of smaller amounts than those commonly employed, since it not infrequently happens that we see cases in which great cardiac irregularity and distress has ensued from too marked a digitalis influence. We have long taught, however, that under certain circumstances the free administration of digitalis for a short time was not only advantageous but necessary. When this drug is employed to combat cardiac failure it may be used in large dose for its immediate effects when prompt relief is demanded, or it may be given in smaller, tonic doses with the idea of increasing cardiac tone and strength, and with every intention that the treatment will be continued over a number of weeks. In cases of valvular disease with ruptured compensation when the symptoms are urgent it is our practice to give digitalone hypodermically in the dose of 20 or 30 minims, and to follow this, at intervals of six or eight hours, by similar or smaller doses, according to the needs of the case. Rarely, however, is it necessary to use these large doses more than two or three times because smaller ones are adequate to maintain the effect the large ones have produced. When the manifestations of ruptured compensation are mild, the small doses may be used at first with equally good results.

During the last year or two considerable attention has been called to the condition which is known at the present time by the term "auricular fibrillation." Noteworthy contributions as to its significance and meaning have been made by Cushny, and particularly by James Mackenzie, to whom we owe most of our knowledge concerning it. It would seem probable that auricular fibrillation is identical with, or nearly related to, the condition previously referred to by Mackenzie as "nodal rhythm." How-

ever this may be, it has now been proved by Mackenzie. Cushny, and others that this interesting state develops in some cases of ruptured compensation with or without valvular disease, but most commonly in cases of mitral stenosis. It consists in a cessation of the normal auricular contractions. in place of which fibrillary movements develop which travel over the wall of the auricle, the movement closely resembling the shivering movements which are seen in one of the thigh muscles of a dog which is suffering from cold. In other instances. auricular fibrillation develops without a valvular lesion. In some patients, when once developed, it persists for the rest of life, but in still others, particularly when it arises as the result of cardiac strain, it may be but a temporary phenomenon. instances of auricular fibrillation it is probable that the functional ability of the heart is considerably impaired, although it must be admitted that the degree of impairment varies to an extraordinary degree in different patients. Sometimes its onset is marked by extraordinary circulatory disturbances and even by syncope and death. In others the condition seems to persist for years, and while the patient's activities may be curtailed, he does not become bedrid-Ordinarily the contraction impulse starts at the sino-auricular node, and passing down over the bundle of His ultimately causes contraction of the ventricle. In auricular fibrillation, in its fully developed form, this impulse does not develop, or at most never reaches the ventricle, the ventricular wall beginning to contract as the result of an impulse arising in the node which is situated at the auriculoventricular margin.

The diagnosis of auricular fibrillation can be only guessed at when the ordinary means of studying cardiac lesions are employed. To determine its presence with scientific accuracy it is necessary to employ a polygraph, by means of which a tracing can be obtained both from the apex of the heart.

or the radial pulse, or the carotid, and from the jugular vein as well. Under these circumstances it will be found that the jugular pulse is of the ventricular form, or it may actually show the fibrillary waves from which the auricle is suffering. An examination of the pulse by ordinary methods shows that its rhythm is very irregular and disorderly, the pauses between the beats changing constantly in their duration, and as Mackenzie has pointed out, two succeeding beats are rarely of the same strength, and the two succeeding pauses are rarely of the same length. Additional information may be gained by inspecting the pulsating jugular, provided care is taken that the impulse transmitted to the jugular by the carotid artery is not confused with true jugular pulsation. Mackenzie makes the additional point that if a presystolic mitral murmur is known to be present prior to the onset of fibrillation, it at once disappears when fibrillation ensues: whereas the diastolic murmur of mitral stenosis persists. Then, too, the patient sometimes has a sense of cardiac fluttering which he is unable to describe, but which is nevertheless so definite that he is sure of its existence.

In the majority of instances in which auricular fibrillation develops there is probably a certain amount of myocardial degeneration and the prognosis depends to a large extent upon its degree, since its presence requires increased labor on the part of the ventricle. This increased labor is met satisfactorily if the heart muscle is strong. and unsatisfactorily if it has become impaired. In the aged, therefore, the prognosis is usually more unfavorable than in those who are younger. On the other hand, it must not be forgotten that in many cases of mitral stenosis the pathological lesion in the valve extends to, or involves, the tissues at the base of the valve.

It is interesting and important to note in this connection that according to Mackenzie's observations, which we have been able to confirm by our own experience, much more can be accomplished by active therapeutic measures than one would suppose from what we have just said. In a large

number of these patients functional activity of the ventricle is greatly improved by the use of large doses of digitalis, and the whole cardiac mechanism seems to be better even if the fibrillation persists. seems to be particularly true in those instances in which the heart-beat, as represented by the ventricle, is too rapid, reaching from 120 to 140 per minute. In those instances in which the ventricular beat is abnormally slow, digitalis is of little value. In the patients who suffer from a rapid pulse large and repeated doses of digitalis accomplish the results that we seek. Usually 20 minims of the tincture three times a day are sufficient, the dose being cut down to 15 minims three times a day after the good effects have been primarily obtained. Mackenzie does not think that these large doses, even when continued a long time, are dangerous, but we believe that there are some patients in whom danger exists, and we would suggest that patients taking these large amounts for any length of time be not permitted to suddenly take the erect posture or to resort to active physical exercise.

In connection with Mackenzie's most recent contribution to the subject it is interesting to note that Gesell in the issue of November 1 of the American Journal of Physiology, as the result of an experimental study, emphasizes the following points:

Auricular contractions play an important rôle in determining ventricular output.

When the ventricles are beating independently of the auricles, nullification of auricular activity resulting from fibrillation causes a fall in arterial pressure amounting to 10 to 15 per cent.

An increased venous pressure results from auricular fibrillation, and compensates to a considerable extent for auricular failure.

The same high venous pressure will, when the auricles resume their function, produce relatively large ventricular outputs. The auricles then to be most effective should have a large amount of blood at their command.

By gradually shifting the time relations

of auricular systole with respect to ventricular contractions, arterial blood-pressure changes are obtained amounting to 55 per cent of the pressure that can be maintained by the filling action of venous pressure alone.

The auricular systole varies in effectiveness in producing ventricular output, depending upon the time it occurs in ventricular cycle.

Auricular systoles completed in approximately 0.008 to 0.02 of a second before ventricular systole is begun seem to have the greatest effect.

Auricular systoles partly stopped by ventricular systole have a positive effect upon the filling of the ventricles.

Auricular systoles occurring entirely within ventricular systole seem to have no filling effect whatever.

Auricular systoles occurring partly within the ventricular systole, and in ventricular diastole and diastasis, increase in effectiveness from *nil* to *maximus* as they approach the beginning of ventricular systole.

Everything that is done to improve our conception of cardiac physiology, pathology, and therapeutics must be studied with great interest because of its importance. The points to which we have called attention in this editorial emphasize the fact which we have reiterated again and again for many years, namely, that every case is a law unto itself and that no definite rule as to size of a given dose of a given drug can be laid down. Some cases require massive doses of digitalis fearlessly administered. Other cases will do well only with small doses, and the judgment and skill of the physician are the factors by which these important differences are to be decided.

## THE THERAPEUTIC EFFECT OF ACONITE.

In olden times when we knew nothing of microörganisms as the cause of disease, it was commonly supposed that hyperemias and congestions were solely dependent upon disorder in those areas through which blood-vessels were freely distributed. Acting under this conception of inflammatory processes it was a common practice for physicians to administer cardiovascular sedatives in the early stages of acute hyperemias with the hope of drawing blood away from the congested area and of diminishing the amount of blood which was sent to it. It is almost inconceivable that the good results which physicians thought they recognized after this use of aconite and similar drugs could have been entirely imaginary, although it is probable that the manner in which they did good was misinterpreted. It is hardly necessary to point out that no one who clearly understood the principle upon which aconite was used under these circumstances could have thought of employing it after inflammation had existed so long that actual pathological changes in the vessels and adjoining tissues had occurred. There can be no doubt, however, that with much improved conceptions of the cause of disease the use of cardiovascular sedatives has very materially decreased, and aconite, which at one time was an exceedingly popular remedy, is not employed by many physicians from one year's end to another.

It has been thought for many years, both by pharmacologists and practical therapeutists, that the dominant effects of therapeutic doses of this drug are to slow the pulse and directly or indirectly lower blood-pressure. A multitude of experiments upon the lower animals performed at different times by a large number of observers certainly support this view. We think, too, that the average clinician who has used this drug, sufficiently frequently to be a capable judge of its influence, holds the opinion that its effect on man is similar to its effect upon the lower animals.

For many years our employment of drugs was purely empirical, and we had little conception of their true action. Then followed a period of active investigation in regard to their influence upon animals which threw much light upon the therapeutic uses of remedies which had been found by practical experience to be of value. Within a comparatively short time,

largely through the introduction of instruments of precision, the effects of remedies when administered to man have been studied and recorded with laboratory accuracy and with advantageous additions to our knowledge.

In this connection it is interesting to note that Frederick W. Price has within the past six months reported to the Therapeutic and Pharmacological Section of the Royal Society of Medicine of London the investigations which he has made upon the action of aconite upon the pulse-rate, his studies being confined to the observation of its influence in cases of cardiac disease. results which he has obtained are directly contradictory to those which have been generally accepted as correct and which we have already stated in this note. As a result of observation upon a large number of patients, using aconitine to represent the drug, he concludes that it has no influence whatever in slowing the pulse, and although he does not appear to have made a very large number of investigations upon its other effects, he nevertheless seems to believe that the remedy is one which possesses little value.

While it may be true that aconite in cases of cardiac disease, particularly instances of ruptured compensation, fails to slow the pulse, we do not think that this is sufficient justification for the assertion that it never slows the pulse, since the conditions which are present under these circumstances are very different from those which are present when aconite has been employed for other reasons. Thus, it may be pointed out that the administration of digitalis when fever is present nearly always fails to slow the pulse, yet this fact in no way contradicts the even more generally accepted statement that digitalis is the most powerful drug that we possess to diminish pulse-rate under ordinary conditions. Aconite may not be able to slow the heart in the presence of dilatation and valvular disease, but may slow the heart in the presence of fever or nervous palpitation.

It is possible that aconite may not act to produce beneficial results in the way which has been generally received, but this does not prove that it does not produce good results when it is properly administered in suitable cases. That it is a valuable remedy in many cases of so-called "tobacco heart," in the overacting hearts of athletes, and in certain cases of tachycardia associated with neurotic symptoms, is, we think, undeniable. Dr. Price's research is, however, to be studied with interest not only because of his individual results, but because efforts to determine the influence of drugs by laboratory methods applied to human beings are comparatively few and should be more frequently resorted to.

#### INFUSION ANESTHESIA.

In the continual endeavor to discover methods of producing surgical anesthesia which will prove more satisfactory than the old-fashioned inhalation method, physicians and surgeons are continually carrying out experiments. Many years ago the production of surgical anesthesia by the injection of ether into the rectum was suggested, and within the last year or two has been resurrected only to be buried again. More recently still another proposition has been brought forward, the most enthusiastic supporter of it being a German surgeon, Kümmel, who reported at the Berlin Surgical Congress 90 patients treated in this manner. So, too, in the British Medical Journal of October 21, 1911, Rood has recorded his experience and presented some interesting facts. The method consists, as originally pointed out by Burchhardt, in employing an ordinary intravenous injection of normal salt solution containing ether in the proportion of 5 per cent. The salt solution is infused until the patient becomes surgically anesthetic, when the infusion is stopped, and renewed as soon as the patient shows signs of returning consciousness. This method has been especially recommended in operations about the head and face where there are well-known difficulties in the administration of the drug by inhalation. It is claimed by those who are advocating its employment that it is not

followed by dangerous complications. One of the difficulties, however, is that not infrequently a clot forms at the point of injection between the first and second or before subsequent infusions. Usually 1/6 of a grain of morphine and 1/100 grain of scopolamine is given an hour before the vein is opened, and the injection is not made until just before the surgeon is prepared to operate.

Rood concludes that the method has the following advantages, although he admits that hemoglobinuria has sometimes occurred after the operation. In 21 cases which he has collected he asserts that the condition of the patient was good at the end of the operation, although the operations varied in length from three-quarters to three and a half hours. Postanesthetic vomiting practically never occurred.

It is interesting to note in this connection that Rood is an enthusiastic advocate of the so-called drop method of administering ether, which has now been used in this country for a number of years, and we are glad to say has become almost universal. The cumbersome inhalation apparatus of our English cousins has at last shown itself disadvantageous. The profession in America is so firmly convinced of the wisdom of resorting to the drop method that statistics are not necessary to confirm them in their belief, but for the sake of his countrymen Rood shows that in about 8000 laparotomies performed by different German surgeons using the closed method with ether or chloroform, the lung complications were in the neighborhood of about 5 per cent; whereas, in about 1400 other laparotomies in which ether was given by the open method, the percentage of lung complications was only 0.56.

#### THE TREATMENT OF SEASICKNESS.

In a number of issues, during the months of November and December, Schepelmann, at one time ship surgeon on the North German Lloyd steamers, has contributed to the Klinisch-Therapeutische Wochenschrift

an exhaustive article upon seasickness, covering its etiology, symptomatology, and This is one of the most extreatment. haustive and complete summaries of the subject that we have seen. In discussing its treatment he deals not only with medicinal measures but with psychotherapy as well, and discusses a very large number of drugs which have been recommended by a host of physicians as being more or less specific, ranging from simple bitters and special bitters (as strychnine and quinine) to such homely remedies as peppermint water and its more active ingredient, menthol; the latter substance, in doses of half to one or two grains, seeming to have given relief in a considerable number of cases. Cocaine has also proved useful, as has also a few drops of chloroform placed upon sugar. He quotes Fawcitt and Wheeler as having obtained excellent results from chloretone, given in the dose of from 5 to 12 grains. Amongst the other remedies which have been employed with seeming benefit are the opiates and the bromides, but the difficulty with both of these drugs is that they are too depressant in their aftereffects. Another remedy which seems to have given excellent results in some cases is chloral given to the point at which it produces drowsiness. For this purpose veronal also seems to be an excellent substance.

#### TREATMENT OF SEPTIC PERITONITIS.

Upon this topic, always of major interest to the surgeon, an extremely serviceable discussion was conducted before the British Medical Association (*British Medical Journal*, Oct. 28, 1911), the opening paper being contributed by Mr. Morison, who likens the shock and the rapid death which result from scalding a large area of the skin to the same results which may follow a corresponding diffuse injury resulting from the rupture of a gastric or intestinal ulcer.

Morison observes that the discovery of the germ which produces septic peritonitis in no way aids us in curing the patient. He holds that for surgical purposes the name

of the organisms present, or even the fact of their presence, is of little avail, for we now know that no mechanical means can get rid of them, and that the name of the variety is of little importance, since some patients with a streptococcal peritonitis recover, whilst others with a bacillus coli infection die. It is held that whatever germ is present the prognosis is always good if the heart is of good volume, not over 100, and is always bad if the extremities are cold, if there is cyanosis, and the pulse over 120. As to the sunken appearance of the face in septic peritonitis with the symptoms of shock, Morison holds that anything which seriously disturbs the balance between somatic and splanchnic circulation will produce such a symptom.

The first principle of treatment is the realization of the fact that the peritoneum has a capacity to deal with organisms and dirt to such effect that, if an overwhelming dose from the source of supply can be prevented, recovery will follow. The only method by which this can be certainly and successfully accomplished is surgical, and consequently the first question after the diagnosis has been made in a recent case concerns operation. As to the anesthetic Morison expresses his strong preference for chloroform until laryngeal reflex is abolished, followed by ether. The best abdominal incisions are the straight one in the middle line and an oblique one in the direction of the fibers of the external oblique muscle. Proper conservatism is expressed in regard to the advisability of flushing out the abdominal cavity, Morison reserving this for cases in which the operations have been done early and extravasation of intestinal contents occurs widely in the peritoneum. He regards a temporary suprapubic glass drainage-tube as useful in arresting or preventing general peritonitis by allowing of the washing out of gastric and other extravasations, the washing if possible being carried out during the repair of the focus of infection. The tube is removed at the completion of the operation.

The indications for more permanent drainage are the presence of infected matter

or the possibility of leak from imperfect suture or damaged viscera.

For general septic peritonitis the drain should be pelvic, and pelvic only, and it should be emptied at the time of operation and kept empty afterward by a syringe pump.

Fowler's position is commended. When the patient is very ill an intravenous saline solution is given with a small dose of adrenalin; the total amount should rarely exceed two pints and should require at least fifteen minutes for its introduction. In the after-treatment proctolysis, as advocated by Murphy, is the most serviceable measure, supplemented where needful by stomach lavage. Morison's opinion as to the use of morphine is especially noteworthy. states that the most emphatic condemnation of the use of morphine, backed up by a large amount of scientific evidence, has failed to convince him that the effects of pain and restlessness are not worse than the evil effects of this narcotic, and he does not grudge a single dose.

Concerning purgatives surprise is expressed as to the revolution which has occurred in reference to their use. There is no doubt that it was once a fashion that was abused in surgery, but the proper use of purgatives should not be forgotten.

In the class of cases with which all surgeons are familiar, namely, those with peritonitis incident to gangrenous appendicitis or ruptured gastric or duodenal ulcers, after the first attack of pain and fright have passed off these patients may look and seem comparatively well and protest against surgical procedures because of this. He regards such a condition as indicative of the fact that the peritoneal circulation is adequate to the strain thrown upon Therefore the intervention should be it. confined to the removing of the immediate He states his belief to the effect that interference is often of doubtful benefit in cases of general septic peritonitis of more than three days' duration, from whatever cause it may have arisen. In the great majority of such instances the focus of infection has by this time been shut off,

and much harm can be done by a senseless and untimely operation. Two cases of perforating stomach ulcer are noted, both of which recovered under conservative treatment. They subsequently developed pelvic abscesses, which were evacuated by the rectum.

In acute pneumococcal and in gonococcic postoperative and puerperal peritonitis—at least in the stage when they usually come under surgical observation—operation is unlikely to do good and may do grievous harm. In other words, when there is no removable septic focus, early operation is not a satisfactory treatment.

Koch, in discussing this paper, expressed belief to the effect that all cases should be operated upon as soon as possible, only those cases which are brought moribund into the hospital being left alone. Even when seen in the later stages he believes that operation is indicated. In the worst cases general anesthesia is not to be used. By giving an injection of morphine and the use of local anesthetics section can readily be performed. Muscle splitting is not advised as a means of access since it is better to get cure with a hernia than to die with a beautifully conserved abdominal wall. When nothing is known about the cause midline incision is indicated. He advocates both sponging and washing out, and notes little difference in the results. In the last two years Koch has employed a suction appliance, a double tube which prevents the bowel from being sucked into the opening. Puncture of the bowel is employed where it is greatly distended. Fistulæ are not recommended. Appendicostomy is serviceable as a means of giving the patient water. The skin is never sutured, as Koch has at times seen gangrenous purulent phlegmons of the subcutaneous tissue follow this procedure. The persistent vomiting following operation is treated by continuous drainage of the stomach, a thin drain being introduced through the nose, as recommended by Westerman. This treatment is much more effective and less fatiguing than repeated washing out of the stomach.

An appendicostomy opening is regarded

as a much better method of administering water than is continued proctolysis, which is apt to soil the bedclothes. In many cases intravenous and subcutaneous injections of physiological salt solution are made. In bad cases adrenalin is also employed. The sitting position is guardedly commended. It is stated that Kuester's ventral position has always been refused by the patient. In the after-treatment such medicaments as coffee, wine, strophanthus, camphor, and ether are advised.

Paterson calls attention to the fact that the Fowler position, the importance of rapidity in operating, and the method of continuous proctolysis, have all been the result of the teaching of American surgeons. The whole operative treatment of diffuse peritonitis is admirably summed up in Dr. Murphy's pithy remark: "Get in quick, and get out quicker." In bad cases he advises the use of cathartics, beginning with the use of calomel, as soon as the patient gets out of ether.

Andrew advises closing cases of peritonitis without drainage.

Wright advocates treatment of the patients at their own homes.

Childe attaches some importance to clothing the patient from head to foot in a cotton-wool jacket.

Bishop advises preliminary administration of morphine-scopolamine before anesthesia, and after it pituitary extract for the purpose of increasing peristalsis. this opinion Bidwell coincides, giving 1 Cc. every four hours for the first three days. Bidwell also advocates the treatment of septic peritonitis by rectal drain—that is to say, an opening made from within, through the pouch of Douglas, by means of a pair of strong curved forceps into the rectum, and a tube passed through this opening, and then through the anus and stitched to the skin of that region. This permits closure of the suprapubic wound. rectal tube he found was frequently removable in two or three days. It had been alleged that if the rectal drain were used it would be impossible to administer saline solution per rectum, but in his experience there was no interference with the administration of saline solution by the rectum.

Wilkie calls attention to the immediate microscopic examination of the peritoneal exudate at operation. The presence of streptococci does not necessarily mean a bad prognosis, providing the cellular reaction is a vigorous one. The important point is the relative number of microörganisms free in the fluid to the number of phagocytic cells. If many of the bacteria are found free in the fluid the prognosis is, as a rule, grave. In order to favor peristalsis and free drainage, he advocates the pouring in of a few ounces of sterile vaselin oil; moreover, this delays the formation of plastic adhesions. In the after-treatment the passage of a continuous oxygen current through the drainage-tube in the pelvis is advocated. This in several cases was followed by marked betterment. In desperate cases an injection of blood serum drawn from the median basilic vein of another patient who has just recovered from an infection by the same bacterium is advocated. Sixty cubic centimeters of blood was withdrawn from the vein; the serum was allowed to separate, and then injected into a similar vein of the patient. Of seven cases thus treated two recovered.

This discussion is of particular interest, since it indicates that to an extent the treatment of acute peritonitis is becoming standardized. Immediate operation, swiftness and gentleness in dealing with the cause, and the Fowler position for proctolysis are practically accepted by all. A few still advocate calomel immediately following operation until the bowels are moved. Given in minute doses it is probable that this drug does no harm. It may even be serviceable by lessening intestinal fermentation, although this is doubtful. In any event the records do not seem to show that the bowels were open earlier than they would have been without this medication. The question of drainage still appears to be an unsettled one, and the vast majority of surgeons are distinctly in favor of its con-Koch's commendation of servative use. continued stomach drainage by means of

the nasal bougie is a matter for careful thought and certainly for clinical trial. It commends itself as helpful in cases both of distention and of persistent regurgitant vomiting. Before pituitary extract is accepted as a reliable peristaltic excitant there will have to be more evidence in its favor than has hitherto appeared.

In the discussion above outlined the view generally accepted was that pneumococcic peritonitis in its earliest stages is not benefited by operation; the data upon which such opinions were based have not been given. To one who has studied the statistical data dealing with the mortality of peritonitis in the past and at the present time, it is clear that the gratifying figures now obtaining are due to earlier recognition and prompter operation; secondly, to the general acceptance of the fact that the vast majority of these cases are due to the appendix and that thus no time is lost in the search for the focus; and finally to the general adoption of enteroclysis and the Fowler position in postoperative treatment.

## REPORT OF THE SURGEON-GENERAL OF THE ARMY.

The reports of the medical service of the army and navy are always of major interest to the hygienist and the therapeutist because they represent an unemotional, unbiased, accurate statement of facts, from which the careful reader may deduce much of value. Thus in looking over the table of surgical operations performed by officers of the medical corps on officers and enlisted men of the army during the calendar year 1910, it is interesting to observe that upon 4175 cases chloroform was used 296 times, ether 1513 times, chloroform and ether 55 times, and local anesthesia 1793 times. Of the total number of cases 27 died.

As indicating the aptness of the medical officer to adapt himself to the fashion of the day it is noteworthy that there were 193 cases of tonsillectomy; 253 cases of appendectomy (with 16 deaths); 177 cases of inguinal hernia (without a mortality); 304 cases of operation for hemorrhoids, every

known method apparently having been adopted; forty-four cases of hydrocele by methods which varied greatly. Of 184 varicocele operations the high excision was the method of choice. Of 403 circumcisions, 310 were done under a local anesthetic and 22 under chloroform. A further tabulation study shows that 71,534 men of the army spent 938,210 sick days.

Alcoholism, acute bronchitis, gonorrhea, malaria, influenza, syphilis, and chancroid are the diseases which incapacitate the most men, gonorrhea standing by many thousand at the head of this list; chancroid and syphilis not greatly exceeding acute alcoholism. It is further interesting to note the distribution of these diseases in the various Thus, whilst the men of the services. Ordnance Department seem particularly subject to acute alcoholism, acute bronchitis, and influenza, their gonococcal and syphilitic ratio is markedly lower than that of any other arm of the service. The Field Artillery, with the lowest incidence of acute alcoholism, exhibits the highest of both gonorrhea and syphilis, the Cavalry coming next in rank. The Coast Artillery shows a large proportion of acute alcoholism and a comparatively small one of bronchitis and influenza, also a fair incidence of both gonorrhea and syphilis.

In regard to time incidence of venereal diseases, it is shown that the great majority of admissions occur in the month of January.

One of the most gratifying features of the report is the rapidly lessening importance of typhoid fever as a crippling factor. It is graphically shown by a chart and it is further stated that during the year 1910, 16,093 men were protected against typhoid fever by prophylactic vaccination. Of these, 73 per cent received three doses, 21 per cent two doses, and 5.7 per cent one dose. During the first six months of 1911, 27,720 persons were immunized; of these, 93 per cent received three doses, 6 per cent two doses, and 1 per cent one dose. The immediate effect of the vaccination is evidenced by the presence of a local reaction consisting of a red and tender area which

subsides in the course of a day or two, and a general reaction consisting of malaise and sometimes fever. In no case has there been any untoward result, not even an abscessat the site of inoculation. General reactions in the last series were absent or mild in 99 per cent of the inoculated. During the last 2½ years there have been a few cases of mild typhoid occurring in the vaccinated eleven in all to July, 1911. It is noted that positive Widal reaction has no significance in the immunized person, hence it is by no means certain that all the vaccinated cases listed as typhoid were actually such, the diagnosis in four of the eleven cases being doubtful. The evidence as to the protective value of the inoculations is regarded as convincing.

The most important innovation of the year is the introduction of compulsory immunization of troops ordered into active service in Texas and along the Mexican border, and of all recruits on joining the recruiting depots. In this way the immunization of all persons in the service will be completed in about three years' time.

As to venereal diseases it is held that the propaganda for their prevention initiated by the central office in January, 1909, has begun to show good results. There is a diminution of incidence, though this is not so marked as to be convincing. In addition to lectures and inspections, individual packets of disinfectants have been issued which are intended to be used as soon as convenient after exposure. The difficulty seems to be in persuading the men to use these packets, to use them in an efficient manner, and at the time when they are likely to be most serviceable. It is pointed out that recruits are much more prone to acquire venereal infections than trained soldiers, and that where the civil authorities exercise a supervision over prostitutes there is a marked lessening of the incidence of these infections.

Perhaps the most striking feature of the whole question is the indifference of enlisted men as to means of prevention. It is stated that they neither fear infection nor are they averse to spending a long period of idleness in hospital while their duties are being performed by their comrades.

From the standpoint of prophylaxis as accomplished by preventive means after ex-

posure, the army experience is by no means encouraging for those enthusiasts who advocate the general introduction of such measures into civil life.

### REPORTS ON THERAPEUTIC PROGRESS.

#### LUMBAR PUNCTURE IN THE TREAT-MENT OF AURAL VERTIGO.

PUTNAM, in the Boston Medical and Surgical Journal of September 28, 1911, reminds us that it is now nine years since Dr. J. Babinski, of Paris, first called attention to the therapeutic value of the withdrawal of 10 to 20 cubic centimeters of cerebrospinal fluid as a means of treatment of certain forms of aural vertigo, his interest in the matter having become aroused in the course of his studies on the vertigo and nystagmus attending the action of the galvanic current upon the structures of the labyrinth.

Babinski's first communication on this subject was before the Société Médicale des Hôpitaux, on October 31, 1902, and since then he and others have published numerous papers relating directly or indirectly to the same topic. A full list of these articles is given in the graduation thesis of Edouard Molard, which sums up all the available information and adds a number of new cases. The whole number of cases thus far reported by Babinski and others runs up to several hundred.

The author's attention was first attracted to the matter five years ago, since when he has used this treatment in cases referred to him by Dr. C. J. Blake and several others of his own, with results which on the whole have been distinctly favorable.

It has been thought worth while to report these results because the use of this treatment, in spite of having been once or twice commented on in American publications, has by no means received the attention that is its due.

The considerations most worthy of attention are the following:

(1) It is to the disorders of the semi-

circular canals that aural vertigo is due, and it is by acting on this portion of the labyrinth that the galvanic current produces (in normal subjects) vertigo, nystagmus, and the inclination of the head toward the side of the positive pole.

(2) The functional efficiency of the apparatus of which these canals are an essential part may be impaired, even though the cochlea and auditory apparatus are in a normal state, so that tests for hearing are an insufficient guide in the determination of the labyrinthine condition in cases of aural vertigo. Much better guides are (a) the strength of galvanic current required for producing vertigo, nystagmus, and inclination of the head, and determination of the direction of this inclination; and (b) equilibration tests, such as those of Bárány.

The best cases for treatment by lumbar puncture are those in which these various tests show that the labyrinthine apparatus is still in a fairly normal state. When the neural degeneration is far advanced, the effects of withdrawal of cerebrospinal fluid are less marked at the outset, and repetitions of the operation, which in the better cases work well, produce less and less marked results and are eventually of no benefit.

The most favorable cases of all are those of pure labyrinthine origin and of relatively short duration. In such cases no great disturbance of hearing is present, and especially no serious middle-ear disease. It is also noteworthy that in cases of this class the sensitiveness of the labyrinthine apparatus to the galvanic current, which before the treatment by lumbar puncture may have been poor, as shown by the fact that it required a strong current (even 20 milliamperes or more) to cause the vertigo.

inclination, and nystagmus, even if it could be induced at all, after the puncture may become again more nearly like the normal. This change indicates a physiological improvement which may not be indicated by any corresponding change in the patient's feelings—i.e., by any great modification of the vertiginous tendency.

The prognosis as regards results of treatment varies so much with the character of the cases that percentage becomes misleading. It may, however, be fairly said that the outlook is very good indeed for those cases in which galvanic and other tests indicate a labyrinthine vertigo with but little nerve degeneration, so much so that few patients fail to obtain benefit, although occasionally two or even three treatments, at intervals of two or three weeks, may be required for the best results.

The amount of fluid withdrawn in Babinski's first experience was 5 to 10 Cc.: later. the withdrawal of 15 to 20 Cc. was found to give better results. The relief from the vertigo sometimes occurred at once, sometimes only after the lapse of several days. In these latter cases (eighty), Babinski thinks, the fluid must have been resecreted by the time of the setting in of the improvement. In a fair proportion of the cases any tinnitus which had accompanied the vertigo. and even, though less often, the deafness, if this were present, were likewise more or less relieved. No untoward results were observed greater than headache, with or without nausea, of one to several days' or even one or two weeks' duration.

Five years ago the writer called the attention of Dr. C. J. Blake to these interesting statements and did a lumbar puncture on a patient for him. Since then he has used the same treatment in about twelve of Blake's cases and several of his own with results that have been equally satisfactory with those of Babinski. Among the most strikingly favorable cases he refers especially to those of two relatively young male adults, twenty-four and twenty-nine years old, respectively, both cultivated, and thus good observers of themselves. It is noteworthy that in both of these cases the head-

ache and nausea consequent on the lumbar puncture were more severe and protracted than in any of the other instances. These symptoms kept the patients practically confined to bed for about two weeks, and alarm would have been felt for the results had not the temperature in both instances remained normal. It would naturally be thought that these two coincident results, headache and relief, implied the withdrawal of an unusual amount of fluid. But this is not the fact, and this inference is not justified.

## ACUTE AILMENTS IN PERSONS ADDICTED TO THE USE OF NARCOTICS.

PETTEY writing in the New York Medical Journal of September 10, 1911, says that fortunately we have one drug in our armamentarium which has sufficient power to bring about free intestinal motion notwithstanding the restraining effects of the opiate, provided it is given in sufficient dose and at the proper time. That drug is strychnine. Ordinary medicinal doses, however, are not sufficient. In estimating the quantity of strychnine required in any given case, age, weight, and physique of the patient must be taken into consideration, as well as the quantity of morphine, the paralyzing effects of which we are seeking to overcome. Young persons are more susceptible to strychnine than older ones. The short, compactly built, in whom a fair degree of muscular tone is present, do not require as much as the tall, loose-jointed person with flabby, atonic tissues, but the relation between the time of giving the strychnine and the morphine, the effects of which we are seeking to neutralize, is equally important with the size of the dose.

Strychnine excites peristalsis by direct stimulation of the motor centers. Motor waves thus induced extend to all the structures which would receive them if the centers were acting normally or without artificial stimulation. The arrest of intestinal motion by morphine is most marked during the primary effects of each dose, but as the primary effects of the drug wear

away, peristalsis gradually becomes reëstablished. Drug users, as a rule, take their drug only during the day, or from the time of rising in the morning until bedtime, say from 8 a.m. to 10 p.m. During these hours the system is kept constantly under the primary effects of the drug and intestinal motion is very much restricted, but during the period between 10 p.m. and 8 a.m. the effects of the day's dosing wear away and peristalsis becomes fairly active. It is during the latter part of this period that the excretory organs do the principal part of their work.

In order to secure prompt action of purgatives, advantage must be taken of this state of affairs. The remedies must also be so compounded and be given at such times as to have the acme of their effects, both as motor and secretory stimulants, occur during that part of this period when the system is least under the restraining influence of the opiate. To do this, begin with the purgative course at 2 P.M., and give on an empty stomach a dose every two hours until 10 P.M. For an average patient taking ten grains or more of morphine a day the following will be found effective:

Calomel, grains x; Extract of cascara sagrada, grains x; Podophyllin, grain j; Ipecac, grain j; Atropine, grain 1/50; Strychnine nitrate, grain 1/4.

Ft. caps. No. 5. Sig.: One at 2, 4, 6, 8, and 10 P.M.

It will be noticed that these capsules contain one-twentieth grain of strychnine each, and that one is to be given every two hours until five such doses are given, making one-quarter grain of strychnine in eight hours. These would be excessive doses for one not under the influence of an opiate, but it must be remembered that morphine opposes strychnine in almost all its range of action, and that we are seeking to overcome its paralyzing action on the motor function of the bowel, and unless a quantity sufficient to do this is given the secretory stimulants will simply stir up a storm in the upper part of the intestinal canal, accompanied by

nausea, vomiting, and other distress, but no bowel actions will occur. It is more than likely that this storm will have to be allayed by an increased dose of the opiate.

During the time these purgative capsules are being given the patient should have his usual dose of morphine, but none must be given from the time of giving the last purgative capsule until free evacuations have been obtained. The physician should take charge of the patient's drug supply at the time of beginning the purgative course and control it from that time on. If left to the patient, he will take a dose at an inopportune time and thus delay or prevent the action of the purgative.

The strychnine and atropine in these capsules will excite a fair degree of peristalsis notwithstanding the restraining effects of the opiate, and this will usually enable the glandular stimulants given with them to induce free evacuation from the bowel in eight to ten hours from the time of giving the last purgative capsule, thus securing bowel movements before the time for the next morning dose of morphine; but more certainly to accomplish this result, six hours from the time of giving the last purgative capsule give one-twentieth grain of strychnine hypodermically and follow in half an hour with two ounces of castor oil or a full dose of salts, and repeat both the strychnine and the oil or salts at intervals of two hours, until the intestinal canal has been thoroughly emptied.

# THE IMMEDIATE EFFECT ON THE COMPLEMENT FIXATION TEST FOR LUES OF TREATMENT WITH SALVARSAN.

CRAIG states in the Archives of Internal Medicine of September 15, 1911, that from the analyses of complement fixation tests after the administration of salvarsan which are given in this paper, he believes that the following conclusions may be safely drawn:

1. The best results, as regards the disappearance of the complement fixation test and the occurrence of relapses, are obtained in the treatment of patients in the primary

stage of lues, and the poorest in the treatment of those in the tertiary stage.

- 2. The complement fixation reaction disappears somewhat more rapidly after treatment with salvarsan in the tertiary stage than in either the primary or secondary stage of the disease.
- 3. The reaction in his experience has disappeared during the second, third, and fourth weeks after treatment in the vast majority of the negative cases.
- 4. The prognosis, both as regards the disappearance of the reaction and the occurrence of relapses, is most favorable in patients giving a plus-minus reaction, and least so in those giving a double-plus reaction.
- 5. As regards the method of administration of salvarsan the best results have been obtained, in the author's experience, from the intramuscular injection of the alkaline solution, and the poorest from the use of the neutral suspension. In justice to the intravenous method, however, it should be stated that a smaller number of cases have been tested, and it may be that this method will prove as efficient as the intramuscular.
- 6. The complement fixation reaction disappears more rapidly after the intravenous administration of salvarsan than after the intramuscular administration.
- 7. As regards the disappearance of the complement fixation reaction better results were obtained in patients who had previously received mercurial treatment than in those who had not, but the time of disappearance of the reaction was little affected.
- 8. The great superiority of salvarsan over mercury, as a specific remedy, was shown in the rapid and apparently permanent disappearance of the reaction, after one or two injections of the drug, in patients previously treated for one, two, or three years with mercurials and in whom the reaction had remained positive.
- 9. The complement fixation test is of the very greatest value as a guide to treatment with salvarsan, and it is the only method we possess of determining whether lues is actually cured by any therapeutic agent.

Finally, the author believes that the data

recorded in this paper eloquently sustain Ehrlich's modest claim that "the introduction of '606' makes a considerable advance in the therapy of syphilis, an advance which is not due to accident, but to the result of systematic experimental work."

### TREATMENT OF GOUT WITH MINERAL ACIDS.

The Medical Record of September 16, 1911, states, editorially, that a generation ago an English practitioner, who was an unattached individualist, created quite a sensation by publishing numerous casesfrom the ranks of his aristocratic patrons, in which reports he always gave the antecedent treatment as prescribed by other notables (whose names he invariably repeated, and whose prescriptions he regularly reproduced). His method was often simplicity itself. After a client had consulted some world-famous authority (who stood sponsor for a special therapeutic principle), and had become decidedly worse as a result, our individualist simply reversed the principle of the treatment, andif we choose to believe him-promptly cured the patient. Apparently he went nofurther into the rationale of the treatment. Thus if a peer had chanced to consult Sir William Gull for his gouty paroxysms and had become distinctly worse after large doses of alkalies, the individualist merely changed the treatment to full doses of nitric acid, whereupon the patient at once experienced decided relief.

Quite recently Schmidt, of Frankfort, has advocated the use of hydrochloric acids in persistent high doses for certain cases of gout. But unlike the English empiricist he has a definite reason for this procedure, which, moreover, has its special indications. The treatment did not originate with him, for long ago the discovery was made that gouty patients often suffer habitually from defect of acid in the stomach. The biochemical studies which throw light on this mechanism are too numerous and complicated to be cited in this connection. They naturally involve the entire biochemical

pathology of gout and uricemia, and eventually of all the chronic affections which are found associated with gout.

Without at present going deeper into the subject, we may simply call attention to the fact, which the author insists upon, that iodides should be combined with hydrochloric acid in these cases. Alkalies are still the remedy in the so-called uratic diathesis, which, however, furnishes but a fraction of the cases of clinical gout.

#### IODINE IN SKIN STERILIZATION.

Dr. J. WESLEY BOVEE, of Washington, D. C., summarizes his observations and experiments as follows: (1) So far as could be ascertained by culturing epidermic scrapings, weak dilutions of iodine, even to 5 per cent of the official tincture, thoroughly sterilized the surface of the skin for a period of time lasting from two minutes after its application to fifteen minutes after. While this inhibitive action of absolute alcohol was quite potent, this property was greatly enhanced by the addition of iodine to an equivalent of 5 per cent of the U. S. P. tincture. (2) Pubic hair placed in iodine dilutions of 5, 10, 20, 30, and 40 per cent strength (of official tincture) respectively, for two, three, five, eight, ten, twelve, and fifteen minutes respectively, all showed growths after three days incubation, while using 50-per-cent dilutions under the same conditions practically always prevented growths. (3) Control scrapings of skin taken from the abdomen above the umbilicus over periods of time varying from two minutes to two hours, when 40-per-cent dilutions were used, always showed negative results as to colonies. (4) Cultures from hair and skin that had been subjected to 50-per-cent dilution of tincture of iodine never produced (5) Tincture of iodine diluted growths. with an equal amount of absolute alcohol might be considered reliable as a local application in preparation of the skin or mucosa in any part of the body. Dilutions of less strength were unreliable if hairs or large hair follicles were in the field of operation. (6) The 50-per-cent dilution of tincture of iodine, if not carelessly applied, is not liable to injure the skin.—
Medical Record, Oct. 14, 1911.

## TREATMENT OF LOCAL SORES BY CARBON DIOXIDE SNOW.

In the *Indian Medical Gazette* for September, 1911, JEUDWINE reminds his readers that this method of treatment is comparatively recent, and ventures to give the results of his experience during the last three months, feeling sure that this method will become universally adopted as it becomes more widely known.

Preparation of the Snow.—It is unnecessary, to enter into a detailed description of the preparation of the snow as that has already been done before, but there is one point about the collection of the gas from the cylinder which may be of use. From experience he found that the preparatory use of a roll of paper swathed in bandages and a towel was not satisfactory. The roll of paper could be easily made too large or too small to fit over the orifice when the gas escaped—in this case gas either escaped in large quanities or the roll would not fit on and necessitated remaking.

Again, the slightest kink in the roll of paper caused the gas to solidify at that place and often caused the roll to be left half empty. Instead of this method the writer had a metal foil pipe made, costing 4 annas; it is the same length as a piece of foolscap paper. One end is made so as to fit easily over the brass knob when the gas escapes, and the other end is slightly larger; into this when in use is put a roll of foolscap paper and the tube adjusted to the cylinder. A cork is placed in the top end, a pad of cotton-wool applied, and a hand towel wrapped round. Gas is quietly and easily collected in solid form, little is wasted, and no elaborate preparations are necessary.

The author has made the CO<sub>2</sub> snow during May and June (with a temperature of 118° in the shade) by this means. The total number of cases treated up to date

has been 74, and no failure has been reported.

The cases treated have been various, and include local sores, of a few weeks' duration up to three years, varying in size from a third bit to a patch  $3 \times 1\frac{1}{2}$  inches, in people from one to fifty years of age. They have been on the face, lips, nose, hands, fingers, arm, leg, thigh, feet, toes, and body.

The length of time the snow should be applied was a matter of experiment, as the author asserts he had seen only one case treated and had read nothing about it. He began with half-minute applications in children, on soft parts such as the face, and in recent cases, and varied it up to one minute for adults, on hard parts such as the foot, shin bone, hand, and in chronic cases.

For the last two months he has given one-minute applications in all cases irrespective of age, position, or duration, and has seen no harm result. A good deal of reaction ensues in many cases; but frequently a cure is effected by a single application.

The interval elapsing between applications varies with the reaction and effect produced.

At first he made patients come for a second application on the seventh day, but by experience he found that as a rule no second application seemed necessary for ten to fourteen days, especially when a one-minute application had been made.

As long as the sore had a clean base and a healthy healing edge, a second or subsequent application did not seem to be necessary, but if the sore required further stimulation, a second application was made on the seventh day, or whenever the patient presented himself. The duration of the second or subsequent application varied with the amount of stimulation considered necessary, from one-half minute to one and one-half minutes in very chronic cases.

In many cases a single application of one minute has been sufficient to produce a cure.

The question arises as to the number of applications which should be made on one sore at the same sitting, when the sore cannot be covered all at once by the CO<sub>2</sub> pen-

cil; that is to say, does any harm result from applying CO<sub>2</sub> for one minute over a large area of a sore at one sitting?

The writer has made six applications at one sitting over a sore  $3x1\frac{1}{2}$  inches with a  $CO_2$  pencil  $1\frac{1}{2}$  inches in diameter; each application was one minute, and the edges of the applications touched. No ill result followed; in fact, the patient came up again ten days later, when the sore was smaller in area.

Warts.—The writer has only treated two warts: one case was not reported; the other case was cured in two applications, one minute duration at an interval of one week. There has been no recrudescence during the last three months.

Chronic ulcers react in the same way as local sores.

This report, Jeudwine thinks, may be of use in showing:

- 1. That CO<sub>2</sub> snow can be prepared during the hot weather.
- 2. That by using a metal tube there is a saving of gas and labor.
- 3. That applications for one minute seem to produce a sufficient and not excessive reaction in patients of all ages, various sites, and different duration of sores.
- 4. The treatment is efficient and is practically painless.

## DILATATION OF THE HEART IN THE ACUTE FEVERS.

Writing upon this topic in the New York Medical Journal of September 9, 1911, Brooks states that as to the advisability of attempted control of overaction of the heart in acute fevers he is as yet undecided. Some cases seem to do better when we allow the heart to take its own way in this respect, and undoubtedly, at least to a certain extent, the rapidity of the heart is in a way a physiological reaction. He is convinced that drugs should not be given for the purpose of slowing the heart in these cases, and has during late years entirely discontinued the use of aconite and, to a large extent, that of digitalis and its group in cases of this

kind, although when a previously diseased heart is known to exist it may be desirable from the first to give digitalis to get the necessary rein on the heart so that it may better respond to quick stimulation if necessary later on in the disease. The ice-bag to the precordium is his favorite in the acute fevers, and when it is apparently accentuated by nervous stimulation, he likes to use codeine, the bromides, and morphine, all drugs having, he believes, most excellent effects in this condition and being entirely free from integral toxic effects on the heart muscle. Again, he refers to the advisability of venesection in many instances, especially in full-blooded patients.

In the control of high temperature the author does not believe that coal-tar products should be used, although they often reduce the excessive temperature very promptly, and in diseases of short duration may occasionally be given with little risk. They are all more or less poisons to the cardiac muscle, and are therefore more apt to add to the degeneration in these diseases than to lessen it through reduction of the Again, he believes that alcohol sponges, cold-water packs, ice-water enemata, spray baths, and the like are the most safe measures. When quinine, aspirin, or other salicylic compounds act as febrifuges, these drugs may, he thinks, be used with safety. As a rule, however, except in specific indications, they have very little effect in this direction.

Among general methods to be put into execution for the prevention of dilatation in the fevers, is primarily the removal of every unnecessary strain on the circulatory apparatus. Rest in bed, with the interdiction of certain movements, such as sudden sitting up, or turning, is very necessary. Relief from mental excitement and stress and from any other factor which may cause a rise of the blood-pressure, especially a sudden one, or which may excite increased rapidity in the heart action, is very essential.

The writer passes very quickly over the discussion of the management of acute dilatation of the heart when it has devel-

oped, because he believes that we all agree very largely on this point—we all do about the same things-and that once the acute dilatation arises, we all get about equally bad results. There are, however, a few points which he does bring up for discussion. He does not favor digitalis in the acute condition, though he does employ it in convalescence. In many instances, as graphically stated by MacKenzie, it does render the action of the heart worse, the pulse more irregular, due to accentuation of defective bundle conductivity, and in most instances its stimulative effects, if any be obtained, are achieved too late to do any good. The drugs which he does use are morphine to quiet the pain, lessen the nervous excitement and distress, and, possibly at the same time, to lessen the tension on the general circulation; strychnine may be given for its action on the muscle, adrenalin for raising the pressure to an adequate point when it suddenly falls, camphor hypodermically for its somewhat similar action, and, most important of all, bleeding to relieve the overdistended right heart. Posture may also materially assist. The ice-bag must be removed from the cardiac area when actual dilatation arises in its acute form, for the author believes it renders the muscle contraction still more efficient, and it certainly increases irregularity, although it may lessen rapidity.

He is fully convinced that, as a class, we have paid too little attention to the conservation of the heart muscle in convalescence from acute fevers, and too little importance is likely to be attached to the condition of the myocardium during this stage, even when we fully recognize that the heart muscle must have been compromised.

The writer states he has made the sad mistake more than once of allowing the patient to get up too soon or otherwise to submit his circulation to too much strain. As a result he has undoubtedly permitted the development of a chronically diseased myocardium where a little longer in bed, a little more attention when the patient first began to sit up and to walk about, might have restored a normal heart to a patient

who became thereafter a chronic sufferer from myocardial insufficiency.

The patient with, or convalescing from, the acute fevers should rest in bed. Blood-pressure and strain must be kept down by hygienic and dietetic measures, or, if necessary, by bloodletting or sedatives, until the heart muscle has been able to regenerate itself. The natural tendency in parenchymatous degeneration of the myocardium is toward recovery, but if strain is put upon the heart too early and before this restitution has taken place, aneurism, fibrosis, or a fatty degeneration is sure to follow.

The diet should not contain too much fluid, and fatty foods, the starches, and sugars should be curtailed. Other conditions not contraindicating, the author is strongly in favor of a highly nitrogenous diet in this stage of convalescence.

## TREATMENT OF SEROFIBRINOUS PLEURISY AND EMPYEMA IN PNEUMONIA.

ANDERS and MORGAN in the Journal of the American Medical Association of October 7, 1911, tell us that in nonpneumococcic pleurisy of the serofibrinous variety it is the custom of many clinicians to aspirate early, and they believe that the disease has in the past been too conservatively treated. When dealing with either serofibrinous pleuritis or empyema occurring secondary to pneumonia, however, an expectant method, unless thoracentesis be urgently needed, is to be adopted until the crisis has been passed, but if the latter fail to appear at the proper time, then the exudate should be promptly withdrawn. the other hand, if a critical decline of temperature takes place in due season, a serofibrinous effusion is quickly absorbed in some cases at least, but if not, then recovery must be enhanced by puncture followed by aspiration.

If a massive effusion develop during the fastigium of pneumonia, displacing the heart and other adjacent organs, or if under these circumstances signs of involvement of the non-affected side, such as moist râles,

bronchovesicular breathing, and impaired resonance arise, and finally, serious symptoms such as urgent dyspnea or syncopal attacks with cyanosis manifest themselves, the withdrawal of the exudate is to be advised. Such cases, however, may demand more radical operative measures for their cure after the usual crises, and these should not be too long withheld. Aspiration during the fastigium is a procedure calculated to do harm on account of the slight shock induced by it, hence it should be undertaken only in cases presenting large pleural collections which give rise to the untoward effects already stated.

The authors desire to state with emphasis that their results from aspiration for pleural effusion in pneumonia prior to the crisis, in patients that have been desperately ill, have been decidedly discouraging.

The aim in the treatment of individual cases of pneumonia in which pleurisy in one of its different forms is associated, is to secure the largest possible degree of comfort to the patient and the withdrawal of the exudate, if it should occur, at the earliest moment compatible with safety to life.

The indications for the use of medicinal substances in complicating pleurisy are few, and nothing in the nature of a depressant, especially such as the coal-tar products, is permissible, since pneumonia, the primary disease, debilitates every organ of the body, notably the heart. To be avoided also, therefore, are salicylates, although these as well as quinine and opium exercise a more or less favorable effect in serous pleuritis in general. Opium is also open to objection in the more advanced stages of pneumonia, especially should the bronchi contain secretory products, since the drug exerts a drying effect, thus hindering their dislodgment. A pneumococcus pleuritis may develop and accompany the pneumonic process from the beginning, in which case opium may have great usefulness as a therapeutic agent in the earlier stages, relieving the pain and inducing repose.

Experience dictates that quinine has a beneficial influence on an inflamed serous membrane, and it possesses a limited value in the pleuritis of pneumonia, both as a supportive agent and in mitigating the intensity of the inflammatory process. It may be administered in 4-grain doses in capsule, followed immediately by a few drops of dilute hydrochloric acid, to insure its prompt solution, four times daily.

In cases of pneumonia in which severe pains due to associated pleurisy develop early, fixation of the affected area by means of strips of adhesive plaster is an effective and feasible measure. These should be, however, removed in the event of the occurrence of effusion. The use of morphine in small doses, administered hypodermically, is not objectionable during the earlier stages of pneumonia, if demanded for the relief of intense pains that remain unrelieved by immobilization of the side involved. On the other hand, in light grades of associated pleurisy, counter-irritation by means of sinapisms is to be advised. the adult, if the patient's nervous system be not too sensitively organized, cold applied in the form of an ice-bag, or ice-water bag, or better still, cold compresses, reapplied at least every hour, as suggested by Baruch, with the least possible disturbance to the patient, is a remedy of choice.

One is quite convinced of the extreme importance of affording prompt relief of the pain, so as to enable the function of respiration to be carried on the more actively, and thus also to preserve the nervous tone and equilibrium of the patient.

#### SIMPLIFIED INFANT FEEDING.

DENNETT in the American Journal of Obstetrics for October, 1911, writing on this important topic says that pediatrists on this side of the water have made infant feeding so complicated that only rarely has the general practitioner attempted to follow them. The German and French pediatrists have never accepted our views on the subject. Until last year the author has practiced and taught percentage feeding, cream and whey

mixtures, the use of gruels made from the various cereals, and has followed other fads as they came along. He was much surprised, therefore, after he began feeding simple milk, water, and sugar mixtures, to find how much better babies got along than they did on the complicated feedings. It is rather humiliating to the pediatrist when he realizes that many general practitioners have always employed these simple milk mixtures more or less successfully even though they have not been used with any very definite system in mind.

The system of infant feeding with which this paper deals is based upon the caloric needs of infants, but does not require the mathematical calculation of the calories in each case. It is founded upon the results obtained in the author's own cases. He has reckoned the calories in each one of these most carefully and has formulated general rules which for all practical purposes are just as good as reckoning calories in each case.

There is just one principle involved—that is, a child will thrive and gain upon a given amount of whole milk and sugar, which amount is proportionate to its weight. This must be diluted with water, but the amount of water or the dilution is not of the utmost importance. However, the food should be made as dilute as is practicable by adding to the milk and sugar sufficient water to bring the total amount taken in twenty-four hours up to the full capacity of the baby. A baby requires so many ounces of milk and so many ounces of sugar for each pound of its weight.

Regardless of how strong this mixture may be, up to a certain limit, the healthy baby will digest it well, gain, and thrive. The main point is to give the baby the amount of actual milk and sugar that he needs; in other words, the number of calories necessary to make him gain. This, of course, applies only to babies having no digestive disturbances at the time. If there is vomiting or intestinal dyspepsia, a food which does not fill his caloric requirements must be used temporarily, and it must be gradually increased after the disturbance

has been overcome, always bearing in mind what his requirements are.

In order to make this system as simple as possible for the general practitioner, a fixed amount of sugar is given to all babies who have no digestive disturbances, except perhaps a baby under one month of age. This amount of sugar is 11/2 ounces to the total twenty-four-hour quantity of food. Cane-sugar may be used, but the author has found that malt-sugar gives the best results. The malt-sugar that he has used is dextri-maltose, which is composed of almost equal parts of dextrine and maltose. Two tablespoonfuls of cane-sugar, leveled with a knife, make an ounce. Two heaping tablespoonfuls of dextri-maltose, all that can be gotten upon a tablespoon, make an ounce. If the average milk having a fat content of 4 per cent is used, an infant requires in twenty-four hours twice as many ounces of milk as he weighs in pounds, and enough water is added to make the correct twentyfour-hour quantity for the given infant's weight and age.

To illustrate: A baby who has no digestive disturbances, perhaps three months of age, weighing 12 pounds, would take 4 ounces every two and a half hours, or eight feedings in twenty-four hours, making a total twenty-four-hour quantity of 36 ounces. Since he needs twice the number of ounces of milk as he weighs in pounds, his food would be made by taking 24 ounces of whole milk, 12 ounces of water, and 11/2 ounces of sugar. This mixture is two-thirds milk and one-third water, which for a baby of three months of age would seem a very irrational feeding to one who has never used this method. The writer's experience is that such a food is digested with ease, if it has been gradually increased in strength. This does not seem so remarkable in view of the fact that French pediatrists feed their babies undiluted milk almost from birth.

The total quantity in twenty-four hours depends upon the age, weight, and digestive capacity of the baby. As a rule one ounce more than the number of months of the baby's age should be given at each feeding.

This does not hold true under one month of age, when the quantity of each feeding should be increased to 21/2 ounces as rapidly as the baby will take it, since in this way he gets 25 ounces in twenty-four hours, and the mixture may therefore be more dilute. It is never necessary to give older infants more than 8 ounces at a feeding, or 48 ounces in twenty-four hours. Babies should be fed at two-hour intervals, ten feedings in twenty-four hours up to three or four months of age, or when having digestive disturbances, or often in beginning artificial feeding, since this enables us to give a larger twenty-four-hour quantity, and therefore a more dilute milk.

There are four classes of babies to which this rule does not apply:

- 1. The new-born babe.
- 2. Fat infants over eight months of age.
- 3. Atrophic or marasmic babies.
- 4. Babies with digestive disturbances.

New-born Babies.-When we realize that breast-fed infants do not show a gain in weight in the first ten days or two weeks, we need not expect to make our bottle babies do better than this. We are, therefore, content to begin on weak foods which do not come up to the caloric requirements of the baby in order that we may educate his digestion by gradually increasing the strength of the food, until he gets enough milk and sugar in twenty-four hours to permit of a gain. After an initial day of starvation we would, therefore, give him a mixture of one-quarter milk and threequarters water with no sugar added. If he were taking 1 ounce every two hours, ten feedings in twenty-four hours, the mixture would then be made of 21/2 ounces of milk and 71/2 ounces of water. This is given for about two days. The next change would be to add sugar and increase the quantity of food given at each feeding. He would probably take 11/2 ounces every two hours, and we would make the food 4 ounces of milk, 12 ounces of water, and an even tablespoonful of sugar, for two days. The baby then being a week old would probably take 2 ounces at a feeding-20 ounces in twentyfour hours, which is made by adding 7

ounces of milk to 13 ounces of water, and two tablespoonfuls of sugar. From this time on the sugar is gradually increased up to 1 ounce in twenty-four hours, and the milk increased up to 10 ounces, adding 10 ounces of water. Food of this strength may be easily given at the end of the third week, and it contains enough calories for the average 7-pound baby to gain upon, since he sleeps twenty-two hours out of every twenty-four, and does not require as much food in proportion to his weight as an older baby. In other words, a baby during the first month of life will gain upon one hundred calories per kilo, or one and one-half times as much milk in ounces as he weighs in pounds, with the addition of 1 ounce of sugar in twenty-four hours.

Fat Infants Over Eight Months of Age.

The body surface is decreased in proportion to the weight. In any one who is fat there is, therefore, less radiation of heat and less loss of energy through this source. For that reason fat babies do not require as much food as thin ones. After eight months of age they do well on 100 to 110 calories per kilo. For this reason we must modify our rule by giving 4 to 6 ounces less of milk in twenty-four hours or by decreasing the amount of sugar. In doing this we must remember that 1 ounce of sugar has the same caloric value as 6 ounces of milk.

Atrophic or Marasmic Babies.—In the same way, then, emaciated babies have a greatly increased body surface, and need more food than the normal baby. also use up a lot of energy by increased muscular effort, since they cry a great deal and are apt to be very restless. After any digestive disturbances are overcome, much more food is necessary to make them gain than a normal baby requires. food value may be greatly increased, if the baby's digestion will stand it, by giving 2 ounces of sugar instead of 11/2 ounces in the twenty-four hours; or 3 to 5 more ounces of milk more than the normal baby requires may be added in twenty-four hours to satisfy this extra need. For instance, a marasmic baby of four months, weighing

8½ pounds, would take a food made up of 17 ounces of water, 2 ounces of sugar, and 19 ounces of milk, which would give that baby 152 calories per kilo; or, by continuing with 1½ ounces of sugar, and increasing the milk 3 ounces, we might make the food 20 ounces of milk, 16 ounces of water, and 1½ ounces of sugar.

Babies with Digestive Disturbances.—It is surprising to see how babies with both gastric and intestinal indigestion improve on a diluted milk and water mixture when the sugar is omitted for a time. The baby with undigested stools may be put upon a mixture of one-quarter to one-third milk, and there is usually a marked improvement within a few days. It also seems to improve the digestibility of the milk if the mixture is brought to a boil. Often the stools become normal within three or four days; then a tablespoonful of sugar is added, and the proportion of milk increased. At intervals of two days the sugar is increased and the proportion of the milk strengthened until the infant is getting his required amount of food in twenty-four hours, according to the general rule the author has given. This should be done very carefully and slowly, when the baby has had any prolonged digestive disturbance. In these cases a cathartic and period of starvation are often harmful. Children with either gastric or intestinal indigestion should be fed at two-hour intervals, because in this way a larger amount of food may be given without making the food too concentrated.

Babies with vomiting also do well when given milk and water mixtures without sugar; with them, however, it is more important that the quantity at each feeding be small than it is to have the milk greatly diluted. For instance, a baby getting 10 ounces of milk and 20 ounces of water, 3 ounces every two hours, may vomit constantly. A mixture of 10 ounces of milk and 10 ounces of water, of which 2 ounces is given every two hours, will often stop the vomiting at once. The quantity at each feeding is therefore of great importance. In any of these digestive disturbances we

should bear in mind the requirements of that particular baby, and aim to strengthen the food as fast as the digestion will permit. We must not expect to get a gain in weight until the caloric requirements have been fulfilled.

#### A SIMPLE DIET CARD AND ITS USE.

WHITE in the Boston Medical and Surgical Journal of October 12, 1911, advises the use of a diet card on the following basis:

In fevers and other conditions where a liquid diet is largely used, a knowledge of food value is very important. There is great difference in the food value of different liquids. The table gives the following:

One glass of milk equals 160 calories.

One glass of 3/4 milk and 1/4 (4 table-spoons) 20-per-cent cream equals 240 calories.

An egg-nog (1 glass milk, 1 egg, 2 teaspoons sugar) equals approximately 300 calories.

A plate of cream soup equals 160 calories. A glass of skimmed milk or buttermilk equals 80 calories.

An equal amount of gruel equals 75 calories.

A glass of albumin water (white of 1 egg) equals 20 calories.

A cup of beef tea or clear soup equals 5-20 calories.

Let us take a 150-pound patient in bed who needs, approximately, 1800 calories a day and who receives ten feedings of a glass (8 ounces) of liquids a day. Some combinations of liquids allowing for agreeable variety will abundantly nourish him, other combinations mean partial starvation. Two glasses each of milk (320), gruel (150), thickened soup (320), egg-nog (600), milk and cream mixture (480); total, 1870 calories.

Two glasses each of milk (320), butter-milk (160), gruel (150), albumin water (40), and beef tea (20); total, 690 calories.

A diet like the last, or only one-half or one-third as large, is often given to invalids and the loss of weight attributed to "wasting disease."

It is well to look over the fever diet and see if it is sufficient. The card helps us to do this easily.

It is easy to increase the food value of a liquid food. Take a glass of milk, 160 calories—each addition of a tablespoon of cream (20 per cent) gives 30 more calories; each addition of a teaspoon of sugar (preferably milk-sugar) 33 more calories; an addition of an egg gives 70 more calories.

The great value of soft solids in fever is easily seen. One tablespoon (½ ounce) milk equals 10 calories, a heaping tablespoon of cooked cereal equals 35 calories, of custard 55 calories, and of ice cream 135 calories.

Coleman has recently shown how it is possible to give typhoid patients 4000 to 5000 calories a day on a diet of milk, cream, milk-sugar, and eggs, without disturbing digestion, and to carry them through their fever with little loss of weight.

To treat diabetes properly, we must know the amount of carbohydrate eaten as well as the amount in the urine—so many grammes eaten, so many grammes passed. We must be able to reduce the amount of carbohydrate eaten regularly and systematically to get the patient's urine sugar-free, and later to increase the amount of carbohydrate definitely and cautiously up to the limit of "tolerance."

Slipshod dieting is responsible for the majority of poor results in the treatment of diabetes. The use of the diet card will help to prevent this. The chief articles containing very little or no carbohydrate are easily seen, such as meat, fish, eggs, cheese, butter, olive oil, clear soups, olives. Add to this tea and coffee and the green or "fodder" vegetables (which are not charted because of their small food value, but are useful for flavor and variety, and as carriers of butter, cream, and olive oil), and we have the "strict diet" which every diabetic takes and takes freely.

In contrast to this we have the carbohydrate food, which must be carefully watched and definitely controlled and varied in amount to suit the individual case. We can quickly estimate the amount of carbohydrate a diabetic is taking at the beginning of treatment if he will give us a simple record of the amount of food eaten at his meals. If, in addition to meat, fish, eggs, clear soups, fats, and greens, he takes, for example, 1 orange (15), 6 tablespoons oatmeal (6x7), 6 slices bread (6x13), 4 tablespoons cream (4x½), 6 teaspoons sugar (6x8), 2 medium potatoes (2x20), 3 tablespoons peas (3x5), 4 tablespoons pudding (4x13), 2 slices sponge-cake (2x13), we have a total of approximately 318 grammes of carbohydrate.

If we wish to give our diabetic approximately 100 grammes of carbohydrate, we may order the "strict diet" plus  $\frac{1}{2}$  orange ( $\frac{1}{2}$ x15), 3 tablespoons oatmeal (3x7), 3 slices bread (3x13),  $\frac{1}{2}$  potatoes ( $\frac{1}{2}$ x20), and 5 tablespoons of cream ( $\frac{5}{2}$ x20).

If we wish 20 grammes of carbohydrate we may give "strict diet" plus  $\frac{1}{2}$  glass milk ( $\frac{1}{2}$ x12) and two tablespoons oatmeal (2x7).

If we wish 10 grammes of carbohydrate, we may add 10 tablespoons cream  $(10x\frac{1}{2})$  and  $\frac{1}{2}$  grape fruit (5) to the "strict diet."

"Strict diets" may prove scanty in nourishment unless some advice is given about amount. It is often wise to be sure of 1000 calories by advising the patient to eat each day at least 3 eggs (3x75), 8 teaspoons olive oil (8x37), and 6 pats (2 ounces) of butter (6x80).

The diet card is an easy means of arranging diabetic diets.

It is almost as necessary to watch the amount of proteid eaten in nephritis as the amount of carbohydrate in diabetes. We usually wish to give a low proteid diet to spare the kidney. Many cases improve surprisingly on it.

Many a doctor would like to plan a low proteid diet, but does not know how, and contents himself with "not much meat and plenty of milk," with the result that more proteid than ever is eaten. The diet card makes it easy to plan a diet containing 50 or 60 or 70 grammes of proteid or any other desired amount. In acute nephritis

we may give approximately 50 grammes of proteid as follows: 4 glasses of milk (4x 7.5), 1 glass (16 tablespoons) cream (16x ½), 2 plates of thickened soups (2x5.5), 11 teaspoons milk-sugar. This bill of fare gives approximately 1800 calories and between 1½ and 2 quarts of liquids.

Later we may give approximately 65 grammes of proteid as follows: 6 glasses of milk (6x7.5),  $1\frac{1}{2}$  glasses (24 tablespoons) of cream  $(24x\frac{1}{2})$ , 3 tablespoons of rice (3x1), 2 slices of toast (2x2.3), 6 pats of butter, and 4 teaspoons of sugar. This gives approximately 2500 calories and 2 quarts of liquids.

In a chronic case we may give 70 grammes of proteid as follows: 4 slices of bread (4x2.3), 2 eggs (2x6.5), 2 slices of meat (2x11.5), 2 glasses of milk (2x7.5). This adds up to 60 grammes of proteid. We would fill out the bill of fare with butter, cream, sugar, flour soups, starchy vegetables, greens, olive oil, etc. A plate of flour soup (5.5) and 5 tablespoons of rice, mashed potato or corn (5x1) would give approximately another 10 grammes of proteid. Total, 70 grammes.

We must remember to give enough food for body needs in all chronic cases, to make up with fats and carbohydrate for the proteid we have cut out. A pleasant variety of food makes this much easier for the patient. Foods with a low per cent of proteid and high food value are especially useful, such as cream, cake, mashed potato, rice, etc. It is not necessary to plan every dish the patient eats and estimate its caloric value. It is much simpler and just as satisfactory to prescribe the proteids definitely and decide whether the needed fats and carbohydrates are taken by weighing the patient now and then and judging his strength and general condition.

It goes without saying that we must consider many other features of the food in nephritis besides proteids and food value, such as the amount of water, salt, and irritant substances.

The diet card helps us to apply the well-known principles in the treatment of obesity, namely, to give a diet which has less food

#### REPORTS ON THERAPEUTIC PROGRESS.

#### FOOD VALUES IN HOUSEHOLD MEASURES.\*

FOODS AS EATEN.	Actual amount.	Household measure.	Approximate.				
			Calories.	Grammes.			
				Proteid.	Fat.	Carbo- hydrate	
Dairy.							
Milk	8 ozs.	A glass.	160	7.5	9.5	12.	
Skimmed milk and buttermilk	8 ozs.	A glass. A tablespoon.	80	7.5	1. 8.	11.5	
Cream thin (20 per cent)thick (40 per cent)	16 grms.	A tablespoon.	. 80	.5	6.	.5	
Condensed milk   sweetened	20 grms.	A heaping teaspoon.	` 70	2.	21	11.5	
		A heaping teaspoon.	85 80	2.	2.	2.5	
Butter	10 grms.	A pat or ball. One-inch cube.	( 65	4.	8.5 5.	.5	
Cheese { Skim-milk	15 grms.	One-inch cube.	45	4.5	2.5	.5	
(American		One-inch cube.	( 70	4.	5.5	1	
Eggs, whole	50 grms.	One.	75	6.5	5.	1	
Eggs, yolk	15 grms.	One.	55	2.5	8.	ł	
Beef tea, clear soups	5 ozs.	A teacup.	5-20	14.5		.5	
(loom (ond flowedow)		A heaping tablespoon.	( 85	8.5			
Fish fat (shad, salmon)	50 grms.	A heaping tablespoon.	105	11.	6.5	1	
(lean		A medium slice.	( 70	11.5	2.5	1	
Meat { medium fat	50 grms.	5x3x¼ inch.	150	31.5	9.	ì	
(fat		0	(200	8.5	18. .2		
Oysters, medium size (raw)eresis and Vegetables (cooked).	16 grms.	One.	8	1.	.2	.5	
Bread, white or Graham	25 grms.	One slice. 4x4x1/2 inch.	70	2.8	.5	18.	
Vienna roll	40 grms.	One.	115	8.5	1.	22.5	
Crackers (Uneeda)	7 grms.	One.	80	.5	.5	5.	
Cereals, cooked, moist	40 grms.	A heaping tablespoon.	85	1.		7.	
Cereals, eaten dry	5 grms.	A heaping tablespoon.	20	8		4.	
Shredded wheat	30 grms. 8 ozs.	One. A soup plate.	110 75	8. 2.5	.5 1.	28. 14.	
Thickened or cream soups	8 0zs.	A soup plate.	160	5.5	4.5	24.	
Macaroni	25 grms.	A heaping tablespoon.	25	1.	.5	4.	
Potato, boiled or baked	95 grms	One medium.	90	2.		20.	
Potato, mashed	85 grms.	A heaping tablespoon.	40	1.	1.	6.	
Rice, boiled	30 grms.	A heaping tablespoon.	85	1.	_	7.	
Corn, cannedPeas, fresh	85 grms. 85 grms.	A heaping tablespoon. A heaping tablespoon.	85 40	1. 2.5	.5 1.	6.5	
Lima beans, canned.	25 grms.	A heaping tablespoon.	20	1.	1.	8.5	
Squash	85 grms.	A heaping tablespoon.	20	1.5		8.5	
ruits.			1	1			
Apple, pear	120 grms.	One medium size.	75	.5	.5	17.	
Apple sauce.	45 grms.	A heaping tablespoon.	70	1 i	.5	16.5	
Banana. Orange.	100 grms. 180 grms.	One medium size. One medium size	100 70	1.5	.5	22. 15.	
Strawberries	100 grms.	A medium saucerful.	40	i:	.5	7.5	
Dried figs, dates, raisins	100 grms.	A medium saucerful.	850	2.5	8.	76.	
Fruit jelly, sweetened	50 grms.	A heaping tablespoon.	160	.5			
Desserts.					_	38.5	
Custard	40 grms.	A heaping tablespoon.	55	2.5	.5 9.	9.	
Ice cream Sponge cake	40 grms. 20 grms.	A heaping tablespoon. A slice 2x4x inch.	185 75	1.5 1.5	9. 2.	11.	
Pudding (rice, tapioca, bread)	45 grms.	A heaping tablespoon.	80	2.0	2.	18.	
Alcohol	12 grms.	A tablespoon.	85	-			
Whisky, brandy, etc. (50 per cent)	1 oz	A small wineglass.	85	[ ]			
Wines (8-25 per cent)	1 oz.	A small wineglass.	15-50	1		1	
Miscellaneous.	0	A booning toospoo					
Sugar Honey	8 grms.	A heaping teaspoon. A heaping teaspoon.	88 88			8.	
Olive oil	4 grms.	A teaspoon.	87	1 l	4.	0.	
Olives	7 grms.	One medium size.	15		1.5	.5	
Almonds, shelled	25 grms.	A heaping tablespoon.	165	5.	18.5	4.5	
Cocoa powders	10 grms.	A heaping teaspoon.	50	2.	8.	8.5	

#### DAILY FOOD DEMANDS.

Adult.	Body weight.	Calories per pound.	Total calories.	72 88 115 120 140-180	
At rest in bed. Slight activity. Light work. Moderately hard work. Very hard work.	150 lbs.	12 15 17 20 28-80	1800 2200 2800 3000 8500-4500		
CHILD.					
Age 0-6 months	7-15 lbs. 15-20 " 25 " 85 " 50 "	42-40 40 36, 34 28 22	800-600 600-800 900 1200 1400 1600	1 gramme per 1b. 85-40 42 55 60 75	

1	gramme	proteid	=	4.1	calories.
1	44	carbohydrates	=	4.1	**
1	**	fat	=	9.8	**
1	••	alcohol	=	7.0	**

<sup>\*</sup>These tables can be obtained on a small folding pocket card from F. H. Thomas Co., 691 Boylston St., Boston.

value than the one habitually used, but with bulk enough to be satisfying and variety enough to be pleasant. It enables us to easily compare the different kinds of soups, fish, meats, vegetables, fruits, and desserts, and to choose those of lower food value.

Compare a cup of clear soup (10 calories) with a plate of thickened soup (160 calories), a heaping tablespoon of cod (35 calories) with an equal amount of salmon (105 calories), a slice of lean meat (70 calories) with a slice of fat meat (200 cal-Compare green vegetables, such as lettuce, spinach, tomato, celery, cucumber, etc., which have a food value so low that they have not been charted (about 100 calories per pound, most of which cannot be used by the body), with starchy vegetables like potato, rice, corn, and peas (35 to 40 calories per tablespoon). Compare an apple or pear (75 calories) with a saucer of figs or dates (350 calories). Compare an orange (70 calories) taken for dessert with 4 tablespoons of ice cream (540 calories).

We can see the need of limiting the amount of foods which have high value in small bulk, such as bread and butter, olive oil, cream, sugar, cereals and cheese, while weak foods such as oysters, beef tea, greens, etc., need no restriction.

Summary.—The object of White's paper is to emphasize the importance of the amount of food as well as kind, and to help make the dose of food as easy to understand as the dose of medicine. The principles of nutrition are better known than the way to apply them. Our use of foods has been much less accurate than our use of drugs, and dietary mistakes have been common through ignorance of food values or difficulty in estimating them. A large part of the difficulty for the busy doctor has been the amount of work needed to estimate the fuel value of a day's food or the amount of carbohydrate, proteid, or fat in it. The method of doing this must be simple to be freely used.

This simple diet card has been offered as an aid in applying our knowledge of the principles of nutrition in our daily use of foods. Its chief value is its convenience. Extreme accuracy is not possible or necessary, and the author's aim has been simplicity rather than completeness. Its object is to avoid weighing of food and tedious calculations by giving food values in household measures.

By its use we can readily plan or estimate the value of any simple diet or control the amount of some one food material, such as the carbohydrate in diabetes or the proteid in nephritis.

It helps to overcome the old excuse that food values are hard to get at, and its greatest use is in educating the doctor in the value of the foods he has ordered and as an introduction to more accurate dietetics.

#### POSTURE OF THE LYING-IN PATIENT.

Mosher in the American Journal of Obstetrics for October, 1911, discusses this question and says that his own method has grown from the observation of 2700 cases of labor seen in private practice, and in the clinic, in an experience of twenty years. He was taught as a student to have the woman on her feet the tenth day. This rule was ex cathedra, and admitted of no discussion. It is no doubt of good average limit, for those mothers whose circumstances compel them for economic reasons to early resume their responsibilities regardless of future conditions of the pelvic organs.

In recent years, however, he has found that all women are not given the same recuperative powers after labor any more than all men are created free and equal, two arguments which are based on wrong premises.

The number of women who have prolapsus and retrodeviations taught him, he asserts, that there was a cause for such conditions. He attributes these conditions to relaxation and subinvolution, which he believes is benefited if not cured by rest in bed during the time lochia rubra persists. Consequently he made a rule years ago that the woman should be on her feet when she can have a record of two days in which no red color is shown. This puts the average patient up about the fifteenth day. walks to a chair, is up an hour, increases the limit daily, as she shows her recuperation, judging by the lochia and height of the fundus. He examines her the fourth week, and cautions her to lie down a part of each day through the sixth week. He has had the fundus at the brim by the ninth day, and the lochia serosa at the same time. and has had the patient in bed eighteen and twenty days. Usually she may be up half the day the third week, and out the fourth week, but he finds a routine practice during the first ten days of raising the head of the bed 8 or 10 inches an advantage in assisting drainage without subjecting the patient to any effort or exertion as is done when on the back rest. Our American women of the better class are not to be compared with the German peasantry, so that conclusions drawn from hospital statistics of the latter class cannot serve as a criterion for us in putting the patient on her feet. On the other hand, the modern young mother of the present generation who has had an education and an opportunity to live the normal life under direction of her adviser will be found to come through her ordeal in better shape by the adoption of the conservative rule than if she followed the heroic teachings of our brothers across the sea.

As to the change of posture in bed, the experience of the writer has led him to allow the patient to be turned on her side after the first few hours; this gives her a sense of comfort after the long-enforced cramped position on her back with her knees flexed, as she was during labor. The writer asserts he has never been unfortunate enough to see a case of embolism following labor, but appreciates that one is never too old to learn.

A vexed question as to the lying-in has always been that of the emptying of the bladder. His early teaching was in case of laceration requiring repair to put a binder around the knees, and always catheterize. In the light of present-day methods, this plan is inexcusable from any point of view.

His students are instructed to make the

catheter a last resort. The patient is to be urged to use the pan while lying on her back, with various devices of pitcher, douche, water poured from height into a vessel or from a faucet, to aid by suggestion the emptying of the bladder. If these expedients fail, she may be turned gently over on her face, lying across the pan to aid by gravity the expulsive effort. Then as a last resort, rather than to catheterize, she is, if the pulse is ninety or under, allowed to be helped out to the jar, which, giving her the upright posture, usually accomplishes the desired result. Contrasted with his early teaching when the patient was kept on her back for voiding the urine, and the catheter passed under the sheet to avoid exposure of the person of the patient, the German practices are revolutionary.

The question then is one in which there has been room for great divergence of opinion throughout the history of midwifery practice. His friend, the late Dr. Theophilus Parvin, whose writings he considers to rank with those of Charles D. Meigs, and Sir Thomas Watson, as examples of medical classics, quotes Sydenham, whose wise observation taught him that in the case of those who died after childbirth the result was in many instances from getting up too soon—that is, before the tenth day. axiomatic statement of Dr. Churchill, the famous obstetrician, was that for one evil result from error in diet he had seen ten from assuming an upright attitude or too early leaving the bed. Dr. Parvin closes his argument with the advice that it is better to keep a woman a week too long in bed rather than to have her up a day too soon. The condition of the woman is a better criterion than the number of days after labor. While sitting up in bed may be permitted for most patients during their meals after the third day, it is better that the puerpera remain in her room at least three weeks.

So while a number of men who have favored a policy of extreme rapidity in the putting of their patients on their feet have been able to produce arguments which, if always based on facts, must be very convincing as to the individual instance, still,

on the other hand, the majority of the profession during all the ages adhered to the more conservative method. The author would therefore make a plea for more uniformity in teaching the subject of posture in the puerperium, basing the conclusions on his own experience as well as on the observation of obstetricians in our great maternity hospitals, as to the effect on these cases as regards involution and recuperation where the two extremes are practiced.

In the meantime, the rule to be laid down from the present state of knowledge is that the involution of the uterus, the color of the lochia, and general condition of the individual patient must govern the conduct of the case, rather than an arbitrary time limit based on the number of days following delivery.

#### THE CURE OF ECLAMPSIA.

In the British Medical Journal of October 2, 1911, Tweedy insists that all toxemic patients should be treated as eclamptic, even though they have not developed fits. The lateral position must be insisted on for the removal from the throat of mucus. Inhalation of oxygen and artificial respiration should be undertaken whenever the patient shows any sign of respiratory obstruction. Food of any kind is deleterious, and should be withheld for long periods after consciousness is regained.

On admission his patients were given ½ grain of morphine hypodermically; the stomach was washed out, and a purgative poured through the tube. There is no importance attached to the nature of the purgative; it must be efficient.

Formerly one to one and a half pints of fluid were left in the stomach, but this has been omitted latterly, as occasionally it was found to regurgitate into the mouth, and the plan was also open to the fear that by its weight and position the fluid might embarrass the heart. After the stomach is washed out the catheter is passed and the urine withdrawn, measured, and examined. The patient is then turned on her side, and the rectum and lower bowel thoroughly washed out with a solution of sodium bicar-

bonate through a long rubber tube. If an enema has been given immediately on admission it will have some effect in softening fecal masses, and will probably make subsequent rectal washing more effective. Lavage must be very thorough; a pint to a pint and a half of fluid is used at a time, and the procedure continued till a large amount of fecal matter has been washed out. Gallons of water may have to be used before these masses are sufficiently softened. When once the bowel is cleared one to one and a half pints of a solution of sodium bicarbonate (one-half drachm to a pint) is left in the rectum.

If in spite of this the urine remains scanty, submammary infusion of a similar solution is practiced; these injections may amount to from 1 to 2 pints.

Saline solution was formerly employed for the purpose, but the fear that salt would add to the difficulty of elimination caused the substitution of plain water, which in turn was finally discarded, because of the theoretical fear that laking of the blood would result. Linseed-meal poultices to the loins help to increase renal activity; they are to be changed every three hours. Mucus that forms in the mouth falls into the cheek and is to be wiped out with moist cottonwool. It is a great mistake to wipe mucus from the pharynx, particularly when it requires the introduction of a gag. manipulation irritates the patient to quite an unnecessary degree, and is one of the many causes of spasmodic choking.

Tweedy says it is a grave error in treatment to leave the patient in the charge of one or two inexperienced nurses. They cannot be trusted or even expected to take the initiative in resorting to measures to restore an asphyxiated patient. A medical man should always be in attendance. This is frequently a difficulty, but must not be considered an impossibility by those who realize its importance. If mucus forms in the throat and spasm of the glottis occurs, the attendant is instructed to draw the patient's head and shoulders over the side of the bed and at the same time to turn the face down toward the floor. This can be

facilitated by grasping the hair. It is immediately followed by an outpouring of bloody mucus from the nose and mouth, with rapid relief of symptoms. Oxygen and artificial respiration are important aids in the reëstablishment of breathing.

The patient is disturbed as little as possible for twelve hours, although if the bowels have not moved treatment is persisted in every eight hours to effect this. The catheter, too, is passed every eight hours. Morphine, beginning with 1/2-grain doses and followed by 1/4-grain doses every two hours, is given whilst the fits persist until 2 grains have been administered within twenty-four hours. At times doses as moderate as these produce surprising slowness of the respirations. When they fall to six or seven per minute it is an indication that enough morphine has been given. Atropine or scopolamine may with advantage be substituted, together with artificial respiration. Should consciousness be restored sufficiently to permit of swallowing, the patient is encouraged to take frequent draughts of hot or cold water, but until recovery is complete all forms of nourishment should be withheld.

As to the lines of treatment to be avoided:

Accouchement forcé comes first. Many patients recovered from eclampsia and carried their children for considerable periods afterward. While labor occurring during the seizures is not pleasant, yet should it do so, the os rapidly dilates. When fully dilated, delivery may be expedited with forceps, but as a matter of fact the application of forceps is seldom found necessary. Delivery is usually easy, and there is considerable difficulty in conducting an aseptic artificial delivery in these cases; for this reason, if for no other, spontaneous delivery is preferable. A patient should not be permitted to die undelivered, and if death threatens, vaginal Cæsarian section should be performed.

Vapor baths and other means to promote diaphoresis are obviously improper procedures. Eclamptics are suffering from paucity of fluid in the circulation, and this in spite of their tissues being possibly solid with edema. What is greatly wanted is a less saturated condition of the blood, and it is impossible to suppose that profuse sweating can have any other action than to increase this abnormality. Only a minimum of toxins (if any) can be eliminated by sweating.

Chloroform is closely associated in its effects on the liver and other organs with the eclamptic poisons. Tweedy asserts he has long learned to dread this anesthetic in all toxemic conditions. Stroganoff, however, thinks that his patients benefit by the quiet induced with very small doses of chloroform (12 to 15 drops) during any manipulative interference, and if by this dose he facilitates the passage of the stomach tube, or lessens the struggle during submammary infusion, he has achieved a great advantage at a cost which cannot be thought excessive. Tweedy asserts that had he known of Stroganoff's method, it would certainly have been tried by him. It will not, he thinks, materially alter statistics, but it should be remembered as a possible aid to treatment.

#### CATCHING COLD.

In the Australasian Medical Gazette of September 20, 1911, Robertson writes on this somewhat homely subject and says his treatment may be divided into preventive and curative. Preventive treatment could consist in the avoidance of all those predisposing and exciting causes which can be controlled. Abundance of fresh air and exercise, avoidance of exposure to cold and wet, especially wet feet, moderation in eating, and the wearing of clothing suited to the temperature should be insisted on. The author believes that sleeping in the open air is a great preventive of colds. Any nasal abnormality should be rectified. He asserts he is constantly seeing patients who were regular sufferers from cold who completely lost that tendency on the establishment of normal conditions in the nose.

What are we to do when a cold threatens? Unfortunately one does not see the cases in

that stage, but there is no doubt many attacks might be aborted if taken in time. Put the patient in bed, give a brisk purgative, calomel at night followed by a saline Ten grains of Dover's in the morning. powder with hot lemonade, and a hot-air or poor man's bath act most beneficially. The latter is an excellent substitute for the more elaborate hot-air bath. Half a dozen soda-water bottles are filled with hot water. enclosed in socks and placed alongside the patient, who speedily responds with a generous perspiration, Opium, in one of its forms, preferably with belladonna, is one of the best remedies to abort an attack. Ten minims of tincture of opium with spiritus ætheris nitrosi and liquor ammonii acetatis every few hours gives excellent results. The author has tried oil of cinnamon in 5-minim doses with a drachm of olive oil in an emulsion, and is satisfied that it acts effectively. Unless well diluted it causes heartburn.

Camphor, belladonna, and quinine in combination have a great vogue in the United States, the dose being gr. ½, gr. ½, and gr. ½ to gr. 1, in that order. It must be pushed until dryness of the throat is felt.

Locally inhalations of benzoin vapor or benzoin and menthol vapor give considerable relief. Possibly nothing gives more relief than a spray of cocaine, but it is well to be very careful with the drug, as if it is left in the hands of patients the habit may be formed. If the condition is not relieved within twenty-four hours the nose may be sprayed frequently with oil of cassia, oil of sandalwood, 5 minims in 1 ounce of liquid vaselin, or a combination of camphor and menthol with oil of eucalyptus and oil of cinnamon is effective. Various snuffs are recommended, but the author asserts he has received less benefit from them than from sniffing up powdered boracic acid. It stings for a moment, but speedily induces a copious watery secretion, with reduction of the tumidity and stuffiness.

When the mucopurulent stage is reached considerable comfort will be obtained by washing out the nose with an alkaline lotion, composed of baking soda, borax and

sugar, or simple saline, after which the free use of the atomizer has a soothing effect. The excoriation of the nares may be relieved by the use of lanolin or witch-hazel cream. The addition of witch-hazel to the alkaline lotion is beneficial for its astringent effect.

At this stage tonics in the shape of quinine and iron are indicated with a generous diet, and if convenient a change of surroundings.

Finally, the author asserts he has had some startling results in all stages of cold, acute or chronic, by the use of a stock vaccine of the micrococcus catarrhalis. doubt an autogenous vaccine would be better, but the other is available at once. He has seen an acute cold aborted by 125,-000,000 in six hours, and he has had a subacute case with involvement of the ears and marked deafness lasting three weeks, and resisting all other treatment, get quite well, with normal hearing, in two days. He has also had complete failures where no result at all was shown. That is easily enough understood. Though he has spoken of this remedy last, he believes he should put it first, since if it acts at all it acts promptly, and no other treatment is necessary. Further, the rationale of its use appears to him more scientific and more in accord with modern knowledge.

In infants the condition may become serious owing to the interference with nutrition, or the infection may be spread to the bronchi, setting up capillary bronchitis. He remarks here that care should be taken to differentiate between a simple nasal catarrh and a specific catarrh. Usually in syphilis there are other symptoms, such as rash, condylomata, fissures and cracks round the anterior choanæ, etc., to guide Further, the child usually looks syphilitic, with dry skin and old appearance. There is usually some difficulty with the feeding, as the child cannot suck and breathe at the same time. It may be necessary to spoon-feed. The child should be kept in an equable temperature and great care exercised in cleansing the nose. Whilst the child's head hangs over the nurse's knees a warm alkaline lotion may be dropped into the nostrils and the nose "stripped" between the finger and thumb. This not only expresses the accumulated secretion in front, but aspirates that at the back. After this has been done a few times a drop or two of liquid vaselin should be instilled into each nostril. Robertson says it is wonderful what an amount of relief this will give.

#### BILIOUSNESS.

FENWICK, writing in the London Practitioner for October, 1911, has this to say of the treatment of biliousness: The diminished functional activity of the biliary and pancreatic secretion necessitates the careful selection of a dietary. Excess of starchy material should be omitted in favor of partially predigested cereals and sugars, and consequently toast is to be preferred to bread, and the various pancreatized and malted foods to oatmeal, tapioca, or sago. Potatoes do not disagree during the earlier stages of the complaint, but uncooked green vegetables and fruits always produce flatulence. Owing to the usual existence of hyperchlorhydria, milk is readily digested when diluted with lime-water, and from two to three pints may be allowed during the twenty-four hours. Cream is often distasteful, and fresh butter may be digested with difficulty. Lightly roasted beef and mutton may be allowed once a day, while pigeon, chicken, game, white fish, tripe, sheep's brains and sweetbreads are good substitutes for the less digestible forms of butcher's meat. Veal, pork, and meat fat must be avoided, and bacon and ham be tried with caution. Eggs are particularly injurious in many cases. Alcohol in any form is apt to produce acidity, but sometimes a little white wine diluted with soda water appears to stimulate appetite. Tea usually disagrees, but coffee with milk or cocoa made from the nibs or husks may be taken with advantage.

The various artificial preparations of the pancreas, such as the emulsion, the glycerin extract, pancreatin or the keratin-coated

pill, should always be given a trial in advanced cases, but the liquor pancreaticus is of doubtful value. The extract of malt may also be employed with advantage in some instances, or taka-diastase may be prescribed before meals. When emaciation is a marked feature of the case, cod-liver oil or the petroleum emulsion occasionally appears to exert a favorable influence upon nutrition. When there is reason to believe that gall-stones exist, olive oil should always be given a trial, a sherryglassful being administered each morning before breakfast. Unfortunately, many people find this treatment very distasteful, and under these circumstances oleate of sodium may be employed with much advantage. According to the writer's experience the pill eunatrol (gr. 4) is of extraordinary value in all cases of chronic cholangitis, three pills being administered three times a day before meals and the treatment continued for three months or longer. Many apparently hopeless cases entirely regain their health by the use of this simple remedy. In other instances the pill cholelith or a cachet containing ten grains of aspirin and eight grains of oleate of sodium taken between meals exerts a beneficial effect. The bowels always require careful regulation.

When gastric hyperacidity is a prominent symptom, a dose of sulphate or phosphate of sodium, Rochelle salt, Carlsbad salts, or some other simple saline, dissolved in a tumblerful of hot water and taken each morning before breakfast, is of the greatest value, but if subacidity exists, recourse should be had to a confection of sulphur and guaiacum, or to a pill containing podophyllin, creosote, and rhubarb.

In no disease is the employment of calomel and other mercurial preparations more abused, and it is highly probable that the daily recourse to calomel, which is such a common practice, produces extreme irritation of the duodenal mucous membrane. On the other hand, a dose of calomel or mercurial pill once a week, followed by a saline the next day, always affords temporary relief to the nausea and giddiness. During an attack of febrile jaundice, due to

acute cholangitis, the patient must remain in bed upon a bland liquid diet. A course of treatment at Carlsbad, Marienbad, or Harrogate often produces decided though temporary benefit. Tonics of all kinds are veritable poisons, and only alkaline mixtures should be prescribed to relieve the symptoms of the secondary gastric and intestinal indigestion. The question of surgical interference should be always considered when clinical evidence points to the existence of gall-stones, chronic pancreatitis, or duodenal ulcer.

#### FLATULENCE.

Burnet in the *Practitioner* for October, 1911, says that in most cases the diet will have to be carefully chosen and somewhat restricted. A rather dry diet will be found to suit best in nearly all cases—little liquid being allowed with meals. This excludes all soups and broths at the beginning of a meal and allows of only a small quantity of fluid toward the close of the meal. What the special drink should be has to be decided in each particular case. Some will do best with plain water, others may require a little stimulant—alcohol in some form.

We have to consider carefully in these cases whether alcohol is necessary, and if so what form is best. If given it should be prescribed with caution, more especially in the case of women suffering from dyspepsia, for oftentimes the temptation to seek temporary relief by its means from discomfort and flatulent distention, and the lassitude accompanying these conditions, is very great. From such beginnings a dependence upon alcoholic stimulants sometimes becomes established. If alcohol has to be given the amount should be clearly defined and given with or just after meals. Effervescing waters are often forbidden, but in the writer's opinion, if taken in strictly limited amount, they are helpful rather than otherwise, owing to the stimulus given by the gas they contain. The light white wines and clarets are of doubtful value, but sometimes a glass of dry sherry seems to aid digestion. Champagne is rarely required, but in some cases where there is much prostration it is useful for a time. Ales and stout are not as a rule well borne. No alcohol in any form should be given on an empty stomach.

Tea must be limited in quantity and must be freshly made. The stewed decoction called tea, so dear to the heart of the hospital out-patient, is a fruitful source of these digestive troubles and of the "spasms" so graphically described by the frequenters of hospital out-patient rooms. Distention and disturbances of digestion are not, however, by any means confined to the class of persons who come under treatment at hospitals, and as a source of flatulence the excessive use of tea amongst well-to-do people should be always borne in mind.

Animal food is, as a rule, best digested by these patients; it must be carefully selected and well, though plainly, cookedunder- rather than overdone; tender beef and mutton, chicken and other birds, game, and fresh white fish. Pork, yeal, goose, duck, etc., should be forbidden. It will be often found best at first to limit the meat meals—luncheon and dinner—to practically one course, light tender meat and a little vegetable, with a biscuit and butter to fol-Much green vegetable will usually not be well borne, and what is given should be rubbed through a sieve-cooked as spinach is served. Often it is best to forbid potato for a time, and to substitute toast or second day's bread. Farinaceous foods have to be given carefully and the effect watched, but where digestion by the stomach is chiefly at fault starchy foods, as they are dealt with chiefly in the intestines, may be given in greater amount. The contrary holds good where digestion goes on best in the stomach; then meats are most satisfactorily digested. Ripe fruits have to be taken in great moderation, and raw vegetables, salads, etc., are not usually allowable in the earlier stages.

Whether meat preponderates in the dietary or farinaceous foods, the absolute necessity for slow eating and complete mastication of all solids should be strongly and repeatedly impressed upon the patient. It

is always well to ascertain the condition of the teeth, and not infrequently some repairs have to be carried out by the dentist before complete and comfortable mastication can be attained by the patient.

Nux vomica is one of the most useful remedies in these cases and it may be given in tincture, or in pill with a quarter of a grain of capsicum and a couple of grains of compound rhubarb pill. Bismuth is of use in many instances, with an alkali such as bicarbonate of sodium, and calumba or other bitter infusion. Salicin is not used so much as we believe it might be, and given in five- or ten-grain doses in water before meals is often very helpful. Pepsin seems distinctly indicated, but it is often disappointing, and at the best it must be looked upon more as a palliative than anything Pancreatin, too, does not give the relief in all cases that we should expect from it. Salicylate of sodium with liquor pepticus, nux vomica, and spirits of chloroform seems useful in a certain number of cases. Extract of malt given with or just after meals helps in those cases in which the digestion of starchy foods is obviously difficult. A few drops of dilute hydrochloric acid in water shortly after meals is often decidedly beneficial. In some cases iron and quinine seem to be indicated, and in many cases we prescribe them only to find how difficult it is to get them to agree, especially in the earlier stages. When improvement has set in they may be tried with more confidence. A pill which is often well borne consists of a grain of reduced iron. with extract of nux vomica, quinine, and pil. rhei comp. It acts as a tonic and also as a mild aperient. It may be varied by a grain of pepsin and a twentieth of a grain of arsenous acid in place of the quinine, and it is useful in anemic subjects. Calomel in very small fractional doses, given twice daily for a few days at a time, has often a very good effect, and where there is a sluggish action of the liver a grain or two of blue pill with the pill colocynth and hyoscyamus, or the compound rhubarb pill, should be given occasionally and followed, if necessary, by a mild saline in the morning, but anything like strong purgation should be avoided.

Where the distention is chiefly in the bowels salicylate of bismuth, beta-naphthol, and salol, in cachet, give at least temporary relief.

Lavage is not usually needed in the cases we are considering, but where there is much accumulation of mucus it is very helpful by clearing the stomach and thus giving a fair start to other treatment.

In acute attacks of flatulence hot water, with aromatic spirits of ammonia and spirits of chloroform with perhaps a teaspoonful of brandy, often relieves the tension and spasm. Sometimes a drop or two of oil of cajuput in mucilage has a very good effect.

In cases in which it is possible for the patient to follow such advice we may recommend riding on horseback or traveling, sea-bathing for young subjects, or a voyage, as the best means for completing the cure and preventing a recurrence of the symptoms.

## THE BLOOD-PRESSURE IN DIPHTHERIA.

The question of what should be done to maintain blood-pressure in diphtheria has light thrown upon it by a paper of Rolleston appearing in the *British Journal of Children's Diseases* for October, 1911. He tells us that in a series of 179 cases of diphtheria the blood-pressure was found to be subnormal in 63 patients, or 35.1 per cent, the extent and duration of the depression having, as a rule, a direct relation to the severity of the faucial attack.

In the great majority the highest readings were found in the first and the lowest in the second week of the disease. The normal tension was usually reëstablished by the seventh week.

In a large proportion of convalescent cases either the readings in the recumbent and erect positions were the same, or the recumbent was higher than the vertical record until convalescence was firmly established.

In laryngeal cases disproportionately high readings were obtained, especially when the dyspnea was sufficiently severe to require operation. Relief of the obstruction by tracheotomy was followed by an immediate and steep fall of blood-pressure (20 to 40 mm.).

The blood-pressure showed little tendency to be affected by the early serum phenomena, but during the late febrile syndrome it was raised in 40 per cent.

Albuminuria was accompanied either by a fall or by no change in the blood-pressure, except in a case of uremia, in which there was hypertension.

In early paralysis the blood-pressure tended to fall. In late paralysis, even when extensive, it was usually not affected.

Sphygmomanometry in diphtheria, as in other acute diseases, though of considerable theoretical interest, has little practical significance.

Adrenalin therapy in diphtheria may favorably influence the other symptoms of suprarenal insufficiency without affecting the blood-pressure.

## EXPERIMENTAL TUBERCULOSIS OF THE TESTICLE.

TYLINSKI (Deutsche Zeitschrift für Chirurgie, 110, H. 4-6) reports in detail his experiments with tuberculosis of the testicle in rabbits, and says that the possibility of the localization of tuberculosis in a previously sound testicle under the influence of a marked trauma is experimentally proven. The process localizes itself in the intercanalicular connective tissue. It can, however, spread to the canaliculi. The favorable influence of semen retained in the testicle by ligation of the vas deferens upon the localization of the tuberculosis has not been demonstrated. A tuberculosis already established in the testicle was in no way influenced by this storing up of semen in the testicle. The immediate spread of tuberculosis from one testicle to another through the seminiferous passages remains undemonstrated. The spread of tuberculosis of the testicle through the seminiferous passages in the direction of the stream has been demonstrated by the experiments of the author, but the spread of the disease against the flow of semen has not been established.

# THE GALL-BLADDER AND BILIARY TRACT AN AVAILABLE THERA-PEUTIC ROUTE TO THE UPPER BOWEL.

MATAS (New Orleans Medical and Surgical Journal, October, 1911) states that from his limited but very satisfactory experience since August, 1910, he prefers the infusion of fluids directly into the duodenum through a catheter whenever this is possible or practicable, rather than inject the gall-bladder so that the fluid may find its way to the bowel by the ducts. For this purpose he employs a ureteral catheter of the largest size, which is allowed to penetrate into the bowel for one-quarter or onethird its length. Where catheterization is not practicable after the abdominal wound has been closed, the slow instillation of fluids through a drain introduced in the gall-bladder in the cautious manner recommended by McArthur is the proper procedure, provided the presence of bile in the drain demonstrates the patulous condition of the cystic duct. In this way the Mc-Arthur precedure as applied directly to the duodenum becomes the analogue of the "Murphy drip" as applied to the lower rectum.

The advantages of direct catheterization over the simple instillation of fluid in the gall-bladder are the avoidance of pain from overdistention and the greater certainty of injecting the desired amount of fluid into the bowel at a given time. The fear of infection of the bile tract by the contact of the catheter with the duodenal contents is amply disproved by clinical experiences. Nowhere is absorption so active or so normal as in the upper duodenum. Whoever has had occasion to test the efficiency of the upper as compared to the lower (rectal) route as an avenue to the circulation must be convinced that this, in a physiological sense, is infinitely more efficient and preferable, whenever it can be made available for the purposes of the surgeon.

Matas notes that the effect of duodenal infusion in arresting the incessant and exhausting postoperative vomiting was most He accounts for its prompt noticeable. action by the supposition that the introduction of fluid into the duodenum and upper bowel in a steady stream starts an active peristaltic wave downward toward the jejunum, which tends to keep the stomach empty and free from bile and pancreatic secretion. Sometimes the fluid appears in the vomitus, thus washing out the stomach. but by the method of direct infusion with a catheter in the duodenum, the tendency of the fluid is always to flow downward rather than upward. The most noticeable effect, however, is the stimulation of renal secretion and the great increase in the urinary output which follows after the irrigation has begun. The steady flow of fluid into the upper bowel increases the fluidity of the intestinal contents, washing the bowel and favoring peristalsis with the expulsion of gases, which are an especially annoying feature in old jaundice subjects. The filling of the blood-vessels and increased bloodpressure is certainly a prompt and most gratifying feature of the procedure in exhausted and debilitated subjects.

The method again can be utilized to great advantage in introducing nauseating medicated solutions, as in hemorrhagic cases in which gelatin and the calcium salts are indicated. This is especially true when the oral and rectal avenues for their introduction are barred by vomiting or rectal irritability. Again, the cholecystduodenal route is an effective avenue for the administration of soluble food and nutrient fluids of all kinds.

The indications for the cholecystduodenal drip are especially in cases of obstructive jaundice associated with nephritis, probably incident to the toxic effects of cholemia. In such cases there is constant danger of urinary suppression.

As to technique McArthur is quoted as follows:

"In practically every case of operation for gall-stones the operator establishes a temporary biliary fistula, either of the gall-

bladder or of the common duct, the purpose being to relieve the cholemia, cholecystitis, or cholangitis, by continuous drainage, in much the same way that a urinary cystitis is relieved. Such treatment has proved to be the most efficient vet devised. To hasten the cure, some have added to this simple drainage a daily lavage of the gall-bladder with an alkaline, mildly antiseptic solution. The loss of much of the fluid used for an irrigation, frequently observed during such a lavage, naturally suggested the idea of studying the effects of various fluids introduced into the duodenum. So striking have some of these been that I desire to call attention to them, as well as to urge their further study by surgeons. First, as a means of deluging the system with water, the temporary fistula can be utilized with surprising advantage. I have repeatedly injected such cases by a continuous irrigation of a warm sterile normal salt solution, 500, 1000, 3000 Cc. of fluid, first as an experimental observation, then as a means of flushing out the kidneys, or clearing up jaundice, or filling up the blood-vessels, and in one case even added dextrose as supplying the food calories most easily assimilable.

"In every gall-bladder drainage, a tube is inserted and is held in place by absorbable purse-string sutures, the latter inverting the gall-bladder wall in such a way that, when the tube is withdrawn, peritoneal surfaces come in contact and the fistula heals. These purse-string sutures make the closure of the gall-bladder around the drain practically hermetic for the first few days. To provide, however, against accidental leakage into the abdomen, some temporary protective drain, such as Bullitt, of Louisville, devised, is employed for added safety. If now, with such a tube, through which the bile has been flowing, thus demonstrating the duct as patulous, we connect the tube of an irrigator containing, for example, normal salt solution, the rate of flow being graduated not to exceed five to six drops to a second, and the pressure to be not more than 20 inches elevation, continuous flow into the duodenum can be established and maintained without discomfort to the patient. Too rapid flow, or too high pressure, will quickly produce pain, simulating mild biliary colic, and might deter one from using this procedure if not cognizant of these facts.

"When large quantities of fluids have been thus introduced there has been observed a slowing of the pulse with a filling out of the vessels, a loss of thirst, a moistening of the tongue and skin, a surprisingly rapid increase in the urinary output (patients complaining of the frequency of the urination), and even edema of the feet in a patient lying on an inclined bed.

"In case of the gall-bladder drainage the patulous condition of the cystic duct can be determined after the insertion of the drainage tube before closure of the abdomen, by the use of a small glass syringe filled with sterile salt solution. When I have had to utilize common-duct drainage, I have never tried this procedure until the second or third day, by which time, if leakage occur, it finds itself confined to the space walled off by the prophylactic gauze inserted for such emergency, and escapes externally."

#### SPLENECTOMY.

McCoy (Journal of the Medical Society of New Jersey, October, 1911) reports four In two cases followed for many months after the operation the health has been perfect, nor has the blood shown any abnormality. A faint underlying bronze hue is noted over the skin of the entire body, resembling the early stage of hematogenous jaundice or pernicious anemia. The bone-marrow assumes increased activity immediately following the operation. There is an immediate increase of white blood cells and a diminution in the number of red cells; an increase in the number of eosinophiles and a disproportionate and more persistent diminution in the hemoglobin. The author notes that diagnosis of contusion of the spleen causing an enlargement of the organ from intracapsular hemorrhage can only be made upon the previous history of trauma. There is no symptom characteristic of the condition, nor would it be possible to differentiate from a tumor of the spleen due to other pathological changes, which might have been present prior to the injury.

A patient showing a tumor and evidencing pain in the splenic area following trauma in this region, particularly if accompanied by abdominal rigidity, should be carefully observed for subsequent rupture of the spleen.

The diagnosis of rupture of the spleen is difficult, whether the rupture occur at the time of injury or the trauma, or follow later because of the contusion. When rupture has occurred, the clinical picture does not differ materially from intra-abdominal hemorrhage due to rupture of other organs.

It is not always possible to differentiate between rupture of the spleen and rupture of the kidney. The pressure resulting from the accumulation of blood from a ruptured spleen may cause urinary symptoms closely resembling those found in rupture of the kidney.

In rupture of the kidney it has been noted in several cases that on careful rectal examination there could be distinctly felt an elevation of the posterior parietal peritoneum of the left side, due to the hematoma, which symptom is absent in splenic hemorrhage.

#### THE RESULTS OF TONSILLECTOMY.

LOTHROP (Boston Medical and Surgical Journal, vol. clxv, No. 5) bases his statements upon data obtained from a series of 61 cases of enlarged tonsils operated upon at the Children's Hospital, Boston. operation had been performed from one to three years prior to these observations. Of the 150 cases that were asked to report only 61 replied. The technique by which the tonsils were removed consisted in freeing the pillars from the capsule with Leland knives; the tonsil was then seized with a tenaculum and drawn inward, the pillars pushed back, and the remaining capsule dissected with a snare. In a few instances a straight knife and dissector were used in

place of the Leland knives. The patients left the hospital the day of the operation and no particular after-treatment was prescribed. Ninety-one per cent of the cases reported decided improvement in breathing. In 60 per cent of the cases there was absolutely no tonsillar tissue on either side. In no instance was there much of this tissue. Very few cases acknowledged having had any attack of sore throat after the operation, and these were mainly confined to those exhibiting some remnant of tonsil. per cent complained of some dryness of the throat on waking in the morning. Ten per cent exhibited the scar of injury to the posterior pillars destroying the symmetry of the palate, but not interfering with the voice. Two uvulas had been injured. Nose "colds" had occurred once or oftener in about 21 per cent of the total number. The proportion was about the same in the two groups of cases with and without tonsillar tissue.

The percentage of postoperative hemorrhages was computed in the total number of cases operated upon in the past three years. During this time there were about 1700 tonsillectomy operations performed at this hospital. Two cases bled so that it was necessary to suture the pillars of one side. In a third case the pillars of one side were sutured as a precaution. There were no fatalities.

## RENAL DECAPSULATION IN ECLAMPSIA.

EHRENFEST (Surgery, Gynecology and Obstetrics, September, 1911) on the basis of an experimental study states that he is forced to the decidedly disappointing but unavoidable conclusion that the value of renal decapsulation in desperate cases of eclampsia actually is based alone on the positive assurance of certain authors that they have seen patients recover after this operation who in their belief would have died without it.

It must, however, be emphasized that this skeptical attitude is justified only in relation to eclampsia. While apparently not exerting any noticeable immediate relief on diuresis—which is the all-important factor in the question of eclampsia—the operation possibly may create conditions favorable for the final restoration of structural lesions, not progressed so far that they are beyond the possibility of repair. The literature contains numerous reports which conclusively demonstrate an occasional favorable effect on chronic nephritic kidneys.

## THE MERITS OF SUPRAPUBIC PROSTATECTOMY.

In a series of papers dealing with this topic (Surgery, Gynecology and Obstetrics, September, 1911) Squier describes his method of enucleating the prostate, which he commends because of its ease and rapidity and because the chance of damaging the ejaculatory ducts is lessened. One cause of fatality following prostatectomy stands out prominently, namely, pulmonary embolism. This has occurred in his work both after perineal and suprapubic operation. He does not believe that the means of approach to the glands has any very important bearing upon its causation. It has been stated that it is possibly more frequent after suprapubic prostatectomy, since the patient is confined to bed for a longer period, but this has not been the writer's experience. In two instances of death caused by pulmonary embolism, death followed in ten hours after a perineal prostatectomy, and in twenty-six hours after suprapubic. Another death from this cause followed perineal operation at the end of the fifth day. The factor which Squier does believe causative is severe vesical or rectal tenesmus, or anything which produces violent straining of the abdominal muscles, in this way forcing a clot into the general circulation. Therefore it is imperative to provide perfect drainage for the bladder and to guard against accumulations of scybalous masses in the rectum.

The suprapubic is, on the whole, a simpler operation than perineal prostatectomy, and men all over the country attempt it where they would not a perineal. There

will be a great many patients operated upon who are poor risks at best, and the combined mortality of the suprapubic operation will be larger than the perineal.

He believes that if prostatectomy is performed either from above or below by surgeons whose experience is equal with these two methods of operation, the rate of mortality will be the same; with the greater number of operative failures, however, on the perineal side.

When it is proven that perineal prostatectomy has no mortality, it will become the operation of election. Surgically, it offers nothing which is not more easily and rapidly accomplished from above, a cure is less certain, and it lacks giving the knowledge which an inspection of the bladder imparts.

Young states that his first operations upon the prostate were by the suprapubic route, but that during recent years he has appreciated more and more that there are a group of cases that cannot be very satisfactorily treated by either perineal or suprapubic prostatectomy—cases of inflammatory median bar formation. Therefore during the past four years he has developed an entirely new procedure, the urethroscopic median bar excision by means of a special "punch" which he has used, with no deaths and with excellent results.

Belfield holds that perineo-urethral prostatectomy seems to possess the chief merits, and to lack the chief demerits, of the perineal operation. The median perineal incision, knife edge upward, opens the urethra at the apex of the prostate, behind the external sphincter (membranous urethra) and in front of the vesical sphincter. Even if the external sphincter should be partly divided, the cut is linear, and the surrounding tissues are not seriously damaged; thus the chances of permanent incontinence and of fistulæ are minimized. The absence of dissection, sharp or blunt, of the perineum reduces the percentage of obstructive cicatricial contraction, and of fistulæ; the rectum is not injured. The mucous membrane of the prostatic urethra is incised cleanly over the enlarged lobe or lobes, sufficiently to permit the lobe to be raised from its bed by the finger. The prostatic capsule and adjacent venous plexus are not wounded. The vesical sphincter is thoroughly stretched and even incised if distinctly fibroid. The frequent combination of a fibroid vesical sphincter with the enlarged prostate is sometimes forgotten; yet instances are recorded in which total suprapubic prostatectomy has failed to restore urination until the sphincter has been dilated or incised at a subsequent operation. Doubtless the incomplete evacuation of the bladder following prostatectomy is sometimes due to neglect to remedy this condition of the sphincter.

Syms advocates perineal prostatectomy as the method of choice when it can be satisfactorily employed, and by surgeons who can satisfactorily accomplish it.

## THE END RESULTS OF OPERATIONS ON THE STOMACH AND DUODENUM.

SHORT (Bristol Medico-Chirurgical Journal, September, 1911) publishes certain conclusions drawn from a study of the records of all the stomach cases treated in the wards of the Royal Bristol Infirmary during the years 1902 to 1910 inclusive. The number of patients under consideration is 165, of whom 60 died, 30 were lost sight of, leaving 75 to be investigated. The great majority of these cases have a history extending over seven years since they left the infirmary. The outstanding feature of the whole study is the demonstration of the extraordinary value of gastrointestinal short-circuiting for ulcer of the stomach or duodenum.

Another remarkable feature in this study is the occurrence of so many cases diagnosed clinically as gastric ulcer, but presenting no signs of the condition on the operation table. This relates not only to five patients with severe hematemesis, but also to a dozen others, whose symptoms had been indistinguishable from those of genuine organic trouble. In two of them the stomach was notably dilated. The author naively remarks that an inaccurate

diagnosis makes no difference, because in these cases a gastrojejunostomy usually brings relief.

A third point of interest is the association of gastric ulcer, or symptoms of gastric ulcer, with movable kidney. It is noted that in one case the kidney was fixed twice without relief before the girl was finally cured by gastrojejunostomy. In another a patient two years after kidney fixation was admitted dying of perforated gastric ulcer. In the third case the nephrorrhaphy was completely successful for years, and then a gastric ulcer formed. Of the perforated gastric or duodenal ulcer there were 61 cases. In two no operation was performed, in one instance because diagnosis was not formulated, and in another instance because the patient was ready to die. In one the ulcer could not be found after prolonged search. These three cases all died. Of the remaining 58 ulcers closed by operation 26 died. There were 12 cases between seventeen and twenty years of age, and comparatively few after the age of forty. gastric pyloric cases 22 were males and 26 females: of duodenal cases four were males and two were females. Of the recovered patients 23 have been followed and 10 lost sight of. In these 23 two had a primary gastrojejunostomy performed and were absolutely cured and can eat anything without trouble. Two had the ulcer excised and the incision sewn up like a pyloroplasty. One is completely cured, and the other can take ordinary food, but thirteen months after the operation began to suffer from occasional pain after meals.

Of the remaining 19 only four expressed themselves as entirely well; two of these came in again for gastrojejunostomy. One of these was cured and the other improved. It is noted that in 85 per cent of the cases of perforating ulcer, the ulcer is not at the pylorus. In 52 per cent of the cases that come to operation for dyspepsia the ulcer is at the pylorus. Early operation, within twelve hours of perforation, saves about 80 per cent of the patients. Later operation is usually unavailing, but the results do not get very bad until the second day. The

figures speak decidedly against lavage of the intestines. Nearly all the sufferers continue to complain of indigestion afterward, unless gastrojejunostomy be performed at the same time.

Of cancer of the stomach there were 33 cases, including 25 men and 8 women. The ages varied from thirty-nine to seventy-one, the great majority being between forty-eight and sixty.

Only in four patients was there a history of gastric troubles eighteen months in duration; usually the symptoms had come on within less than a year. Pain was always present, vomiting was usual, and anorexia and wasting were usually noted. three patients vomited blood, and in one of these it was eighteen months before admission. Obvious or occult blood in the stools was much commoner. A lump was felt in the abdomen in 19 of the 33 cases. One case sent out after a gastrojejunostomy, with a supposed cancer, has remained well for four years. Another patient subjected to pylorectomy for supposed cancer was demonstrated later, on microscopic examination, to be suffering from an inflammatory lesion. This man died of shock. In 20 cases the abdomen was explored and closed again. Of these seven patients left the infirmary and were lost sight of. Five others died within a month. No deaths seem to have been hastened by the oper-Only one individual ative intervention. lived for more than four months: he survived for more than two and a half years with a huge tumor, which proved to be inoperable on the second attempt, after which he died. In eight cases gastrojejunostomy was performed. Two died of the operation within a few days. One patient not relieved was lost sight of. In the other five some had transient comfort. In four patients extensive resections were performed. Two died of shock within a few days.

Of 41 cases of gastric or pyloric ulcer, 20 patients out of 29 followed through were absolutely and perfectly cured and could take any ordinary food following gastrojejunostomy. There were no deaths from the operation.

Of duodenal ulcers there were five men and one woman. One was treated by gastroduodenostomy. The other five had a gastrojejunostomy performed. One died suddenly and unexpectedly on the sixth day. Three patients were perfectly cured and one was almost well.

There were seven cases of hour-glass stomach. Three were cured and one much improved, one not improved, and two died. Of cured patients one had a double gastrojejunostomy performed; another a gastroplasty of the constriction and a gastrojejunostomy of the distal pouch; and the third had a gastrojejunostomy of the proximal pouch.

Operation was performed on seven patients for hematemesis, this being the only indication. In two cases there was an ulcer present in the stomach. In five nothing abnormal could be found, from which it is clear that severe repeated hematemesis is not an evidence of gastric ulcer. Three of the patients had been treated for pain and a little vomiting; in the others there was scarcely any warning before the bleeding came on. With the exception of one recent case which has a persistent sinus after gastroduodenostomy all the patients were cured, though one has some nausea and a feeling of tingling in the scar. Five had gastrojejunostomy performed.

There was one case of congenital stenosis of the pylorus treated by pyloroplasty. The child did well for three weeks and then died for no apparent reason.

A tabulation of the reported cases is appended to this serviceable article.

### THE SIGMOID IN RELATION TO PELVIC DISEASE.

BARRETT (Surgery, Gynecology and Obstetrics, September, 1911) emphasizes the fact that the intimate relation of the genital tract to the terminal reservoirs of the urinary and alimentary tracts permits of easy communication of disturbances, and pathologic conditions.

The sigmoid through its ready adhesions may, like the omentum, serve to wall in a

genital infection and save the patient, after which it may through perforation serve as a means of escape for this infection and the resulting pus, or by reason of adhesions it may introduce new elements of danger through colon bacilli infection and bowel obstruction.

The symptoms of constipation, diarrhea, passage of mucus or blood, the presence of a sausage-like mass in the left iliac fossa, etc., should lead us more frequently to include the pathologic conditions of the sigmoid in our pelvic diagnosis, especially when there seem to be adhesions on the left side.

The associated sigmoidal conditions are undoubtedly primary, in many instances, as they are found in men, although adhesions here may be due to infections of the vas. They are very frequently secondary to the disease of the tubes, ovaries, and uterus, as they are frequently observed after definite infections of this tract.

An intra-abdominal investigation of pelvic disease should include inspection and palpation of the sigmoid, when with few exceptions left-sided and not infrequently right-sided pelvic trouble will be found accompanied by adhesions, obstruction, and kinking of the bowel, or evidences of traction upon the bowel or the tube or ovary, or both.

Every pelvic celiotomy should be undertaken with the possibility in mind of meeting conditions of the bowel, ranging from adhesions to thickening, diverticuli, obstruction or new growths. The extra hazard of intestinal surgery may be projected into almost any case of pelvic surgery, and the operator should be mentally and materially equipped to meet the emergency.

Adherent, thickened or inflamed appendices epiploicæ or other projections from the sigmoidal wall must be considered in the light of our present knowledge of diverticuli and diverticulitis, and not amputated with the thought only of checking hemorrhage, as a possible lumen may be encountered.

On account of the frequent adhesions of the sigmoid, cecum, and appendix to the round ligament or the peritoneum, tube, or ovary near the round ligament, no round ligament operation should be undertaken unless these structures are rendered free for a sufficient distance so that no kinking may occur or undue traction be made upon the bowel.

This frequent pathological condition of adhesion to or near the round ligament is a strong argument against extraperitoneal shortening of the round ligaments.

The treatment of acute or chronic infections of the genital tract should include thorough elimination from the bowels, yet efforts in this direction should take into account the possible crippled condition of the bowel through inflammation, dilatation, sacculation, etc., due to the interference offered by adhesions, infections, and inflammatory masses of genital origin.

#### SURGICAL APPLICATION OF PATH-OLOGICAL PHYSIOLOGY IN SHOCK.

SLOAN (Cleveland Medical Journal, September, 1911) states that we have now come to realize that death in shock is due to a lesion in the central nervous system. In comparing clinically the patient dying from a severe infection and one in the terminal stage of shock, it is well-nigh impossible to distinguish the two conditions. The only difference is that in shock the chromatin loss occurs mostly in small areas in the cell, while in infection the chromatin loss appears as if due to solution, giving the cell a more washed-out appearance. regard to the question of blood-pressure this is of paramount importance, since the central nervous system withstands anemia very poorly. Strychnine is condemned, morphine commended: intravenous saline solution containing adrenalin is regarded as helpful, but not permanently so. The external compression suggested by Crile in the form of a rubber suit Sloan states has been abandoned, since the solution of the remedy for low blood-pressure came when new blood was introduced into the vessels. does not leak through the vessels, hence when there is a large amount introduced the blood-pressure has to stay up. This increase will last several days. It can be demonstrated that when the vessels have completely lost their tone, the pressure can be kept up hours at a time by giving a dog a plethora of new blood. In this case there is hardly any vessel tone, the pressure really arising from overdistention. Crile regards the nerve impulses arising from trauma as the principal causative factors in shock. Laboratory data are quoted to confirm this conclusion.

Nitrous oxide is much less harmful in shock than ether anesthesia, as shown by Crile and Prendergast. The difficulty of distinguishing between shock and hemorrhage is pointed out. In severe cases morphine given in adequate doses is the first treatment, with abstention from anything but a cleansing dressing. The foot of the bed is elevated, peripheral bandages are applied where this is possible, running over the abdomen, on which is placed a thick pad of cotton. External heat is used and when needful intravenous adrenalin-saline solution, 1 to 50,000, may be tried. It is best not to give it faster than 500 Cc. in an hour. If the shock continues to progress we must transfuse the patient in order to save his life.

This is usually applied when the patient's pulse cannot be maintained below 140. The donors should be men, as the radial artery is larger. Lanky individuals have fewer anastomosing branches coming off the radial. It is stated that there is no danger of hemolysis when both donor and recipient are in good health. The possible presence of agglutinins may be disregarded. Novocaine 1:400 makes the best local anesthetic. After the injection of novocaine the part is massaged for a few seconds to spread the novocaine evenly. It is best to ligate each little branch coming off the radial so as to make the dissection bloodless, and one should use very sharp knives. artery should not be tied until just before it is slipped over the vein. It may be necessary to dilate the artery with a mosquito hemostat smeared with vaselin. A vein is selected from the forearm of the recipient

just large enough to cuff over the largest cannula that the exposed radial will take. The vessels must be handled very gently. using no traction and keeping the anastomosis warm with saline solution. Vein-tovein anastomosis is an easier procedure, but the blood flow is slower. The pressure in the donor's arm veins may be raised by using just enough compression above the elbow so as not to cut off the arterial pulse. The flow of blood should be noted every five minutes for a minute in order not to overtax the recipient's heart; for in case the blood flow is too rapid it may dilate. Acute dilatation is shown by respiratory distress, cyanosis, increase in pulse-rate, lessened pulse volume. On percussion the diagnosis is confirmed by finding the cardiac dulness enlarged to the right of the sternum. The remedy is to lower the feet and press several times over the chest to help to empty the heart. Continue the blood flow until the recipient's blood-pressure is raised 20 to 30 mm. Hg. or the pulse-rate falls with an increase in pulse volume, the compression bandages over the lower body having been gradually cut away and the patient's feet lowered. The blood flow must be stopped when the donor shows the first paling of the lips, which is best seen at the junction of the vermilion edge and the skin. It may take forty-five minutes' flow to cause this. If the patient is in bad condition it is better to transfuse and complete the operation at once.

Tincture of iodine is used to sterilize the skin, as it saves time for the surgeon and much discomfort for the patient. Nitrous oxide anesthesia causes the least damage. All tissues to be cut are blocked with novocaine 1:400 or cocaine 1:1000, just as though one were doing the operation under local anesthesia alone. The nerves are blocked as far centrally as possible. If nitrous oxide is not to be had the next best anesthetic in crushes of the legs is spinal anesthesia. After withdrawing 10 Cc. of spinal fluid substitute 10 Cc. of a solution containing 40 mg. of novocaine and two grammes of granulated sugar. The upper part of the patient's body is kept elevated

30 degrees for an hour after the injection. The block from the local anesthesia lasting for from twelve to twenty-four hours will be very valuable, for by this means the sensory stimuli can be entirely prevented from reaching the sensory nervous system. shoulder injuries, if nitrous oxide is not at hand ether should be employed, together with blocking of the skin, muscles, and nerves as though the patient were awake. Injury in this region causes more shock in proportion than in the lower extremities. Injury of the arms can be managed by blocking the brachial plexus in the neck or in the axillary fossa. The pulse-rate and volume are indices for removing the pressure bandages from the lower part of the body: usually this can be done in twelve to twenty-four hours, and gradual removal is desirable.

Sloan states that in treating shock cases by the principles given above there is immediately apparent an enormous drop in mortality, and that they are now able to save 90 per cent of those who formerly died from crushes of the extremities. Intraabdominal bleeding after trauma also has a much lessened death-rate when the diagnosis is properly made. It is held that death from shock will in the near future be the exception in well-organized clinics.

### TREATMENT OF ACNE VULGARIS AND PRURITUS HIEMALIS.

GUNN (Practitioner, November, 1911) advises for acne vulgaris bathing the face at least twice a day with hot water and an alkaline soap, followed by copious douches of cold and preferably rain water. cream he considers especially undesirable. He uses a colloidal sulphur which is readily suspended in water, has no characteristic smell, and is much less irritating to the epithelium than the ordinary forms. A sufficient quantity of sulphur is shaken up with distilled water and allowed to stand until the supernatant fluid just loses its milky tinge. It is then decanted off and is ready for use. It should be shaken well and applied to the face by means of a fine spray

as often as the skin appears unduly oily. One application may be allowed to evaporate, and the skin again sprayed and afterward dried with a very soft handkerchief or towel. He states that the comedone is best left alone. When prominent and disfiguring it may be gently expressed, using a comedo-extractor with a practically flat or very slightly rounded surface applied next the skin.

The important point in the treatment consists in utilizing the antiseptic and penetrating properties of alcoholic solutions of iodine, such as are now in vogue for sterilizing skin surfaces for surgical operations. He uses a one-per-cent solution of iodine in rectified spirit and has it prepared freshly in small quantities at intervals not exceeding one month. This solution does not contain potassium iodide. Its method of use is as follows: The skin, which must not have been washed for several hours previously, is freed from excess of sebum by wiping with a soft towel, and is then uniformly painted with the iodine solution by means of a fine camel's-hair brush. This causes a slight tingling sensation and some lacrimation when applied around the eyes if the lids are not kept closed. These feelings, however, are quite momentary; the spirit quickly evaporates, and the surface becomes quite dry. It is better done at bedtime, left on all night, and washed off in the morning. There is never any trouble with the pigmentation; a trace of ammonia in the morning wash helps to remove the remaining stains. A very slight congestion of the skin follows the application, and a little powdery desquamation and considerable inhibition of the sebaceous secretion The application can be repeated in about four days, but usually intervals of a week are sufficient, gradually increasing the intervals until the process appears completely under control. In addition the instructions given above are practiced.

In this condition it is not unwise to keep the skin always in a state of mild desquamation. With this in view soaps containing tar (whether wood or coal tar seems immaterial), sulphur, ichthyol, etc., may be

From puberty until about thirty used. years of age plain supernatant fat soaps should not be regularly used. After the age of thirty years the soaps used should contain a minimum amount of uncombined alkali. The ease with which a soap lathers may be taken as a rough index as to the amount of alkali present. The use of a rubber sponge is of great value in emptying the sebaceous ducts of accumulated secretion. It should be used without soap and with very little water and drawn across the face until it adheres to the skin, and by traction and suction empties the The majority of the movements should be in a direction contrary to that of gravity, to prevent undue sagging of the skin in a downward direction.

Washing should always be done with hot water, followed by the application of cold, and the tonic and stimulating effect of the latter may be increased by utilizing one old beauty formula, the addition of sufficient tinct. benzoin simplex to give it a milky appearance. Frequent and thorough cleansing of the scalp with Hebra's soap spirit—sapo mollis 3iv, spt. vini rect. 3ij—followed by a sulphur and salicylic ointment or similar lotion, is usually effective. The following lotion has proved both useful and acceptable, and may, if necessary, be perfumed: Ac. salicyl., 3ij; ol. amygdal., mins. vj; spt. vini rect., ad 3vj.

As to the treatment of pruritus hiemalis, an extremely stubborn case is recorded in which all treatment was unavailing until the salts of lime were administered internally. The patient was put on tablets of calcium lactate 15 grains three times a day an hour before meals. The condition grew worse for two weeks, but about the third week a decided change became apparent; the itching became distinctly less intense; the lesions due to the excoriation gradually healed, probably on account of the disappearance of the incentive to scratch. At the end of a further three weeks or month the condition was practically cured. calcium was then stopped, and though once or twice during the winter the condition showed a tendency to reappear, especially

in frosty weather, a dose of 30 grains of the lactate taken at bedtime was sufficient to insure a good night's rest.

## A REVIEW OF 1000 OPERATIVE CASES OF APPENDICITIS.

KROGIUS (Archiv für klinische Chirurgie. Bd. 95, Heft 4) reviews 1283 cases of appendicitis treated in the University Klinik in Helsingfors during the years 1901 to 1908. Of these 1033 were operative cases, 452 being operated upon in the acute stage and 551 in the interval. Of the acute cases there were 177 of diffuse suppurative peri-In 129 the operation was done early before pus had formed, or when the cases were on the border-line between the serous and the suppurative stage. In the remaining 146 cases operation was done on account of circumscribed abscess or other complications. Most of the interval cases were operated upon because of recurring appendicitis, and the minority, though seen in the acute stage, were held for operation after the subsidence of the The 250 cases not operated upon were for the most part mild cases in which an operation was considered unnecessary, and some were cases of diffuse peritonitis seen at such a late stage that operative interference was not justifiable. Of the cases operated upon in the acute stage, 39 per cent of those with diffuse peritonitis, 5 per cent of those operated upon early, and 18 per cent of those operated upon late, died: of the interval cases 10 per cent died.

This series of cases agrees with all other statistics in showing that appendicitis is most frequent between the ages of ten and thirty years of age. Only 49 cases were between fifty-one and sixty years of age, and only 12 cases between sixty-one and seventy years of age. The male sex is afflicted about twice as frequently as the female. The series offers no evidence of any especial frequency of the disease at any certain time of the year. In reference to the question of the part played by the fecal stone in appendicitis, it is observed that fecal stone was found in 18 per cent of

the cases. It was found in 12 per cent of the chronic cases and 32 per cent of the acute cases. This seems to indicate that fecal stone is not necessary for the origin or further development of appendicitis, nevertheless it predisposes to a high grade of inflammation and consequent destruction of the appendix.

In accordance with the opinion held by Sonnenburg and many others that an acute attack of appendicitis is only a culmination of a chronic process in the appendix, the series studied by the author showed that in the great majority of cases appendicitis occurs in those persons whose appendix had previously been the seat of a disease process. In reference to the question of early operation it must be recognized that appendicitis is a treacherous disease which cannot be reckoned with. At the outset it is impossible to say what the further course of a case will be. Even when the symptoms appear to be mild the appendix may be on the verge of perforation. Therefore it is best to operate upon all cases as soon as a diagnosis is made. Although this is correct in theory, it is very difficult to carry out in practice, chiefly because the cases do not fall into the hands of the surgeon in the early stage. Of the dangerous complications the most important is diffuse suppurative peritonitis. This was the cause of 65 per cent of the deaths in this series. It is hoped that this complication will occur less and less frequently as early operation becomes more frequent.

Of the 177 cases of diffuse peritonitis operated upon, 109 recovered and 68 died. During the period covered by this series the mortality was reduced from 62 to 28 As the method of treatment per cent. throughout this time was the same, the reduction in mortality was due to the fact that cases are now submitted to operation earlier in the course of the disease than formerly. Of 146 cases which were operated upon at a late stage of the disease, intraperitoneal abscess in the right iliac fossa was found in 107 cases, pelvic abscess in 13 cases, right-sided subphrenic abscess in 6 cases, retroperitoneal abscess in

8 cases, pylephlebitis in 4 cases, obstruction of the bowel in 6 cases, and perforation of the duodenum in one case.

# COMPLICATIONS FOLLOWING THE SUBMUCOUS OPERATION UPON THE NASAL SEPTUM.

ALEXANDER (New York Medical Journal. Oct. 14, 1911), after alluding to the fact that the submucous operation has almost entirely displaced all others for deflected septa and noting that the good results obtained fully justify its popularity, calls attention to hemorrhage and infection, which may both be so severe as to be life threatening. The ordinary oozing which occurs following the first incision is best controlled by the application of a piece of absorbent cotton saturated with adrenalin. The secondary hemorrhages are usually moderate. Infections are by no means rare. In an experience of over 400 cases he states that he has seen it occur in only 21. In character it may vary from the mildest amygdalitis to the most severe purulent meningitis and septicemia. Nor are acute otitis media and acute mastoiditis infrequent complications. He reports three cases of severe infection, two ending fatally in acute purulent meningitis.

### THE TREATMENT OF PULSATING EXOPHTHALMOS.

ZELLER (Deutsche Zeitschrift für Chirurgie, Bd. 111, H. 1 and 2) says that pulsating exophthalmos is in the great majority of cases produced by rupture of the carotid artery into the cavernous sinus with resulting arteriovenous aneurism. This condition results in most cases from trauma, but it may be idiopathic. In 244 cases collected up to the year 1902, 160 were traumatic and 57 were idiopathic; of 68 cases collected by de Schweinitz and Holloway, from the year 1901 to 1907, 53 cases were traumatic, 14 idiopathic, and one of unknown origin.

As regards the treatment of pulsating exophthalmos, in which the manner of origin, the symptoms, the cessation of pulsation and murmur upon compression of the carotid characterize it as due to an arteriovenous aneurism involving the internal carotid artery and the cavernous sinus, the principles are as follows:

In order to favor a cure, and especially as a preparation for ligation of the artery, systematic compression of the common carotid upon the affected side should be carried out. By means of this compression the collateral circulation is established, the heart is accustomed to the increased work thrown upon it, and the test is made whether the patient is able to endure the elimination of the carotid. If cerebral disturbance is caused by this compression, treatment by ligature of the carotid is contraindicated. If good results are obtained by compression treatment, then the ligation of the internal carotid of the affected side, as near as possible to the base of the skull. should be carried out without hesitation. Double ligature should be put on the carotid and the vessel cut through. The external carotid should not be ligated, because such ligation does not protect against recurrence. and this vessel should be retained in order to afford a blood supply to the eye in case the ophthalmic artery becomes obstructed.

In debilitated subjects roborant treatment should be carried out, and, in the case of heart weakness, the heart should be strengthened as much as possible before operation. In patients of this kind, especially when over forty years of age, ligation should be avoided in the worst cases and should be carried out only when systematic compression of the carotid produces no cerebral disturbance. In strong young people and in children ligation can be carried out under local anesthesia. In idiopathic exophthalmos, in old people, and in cases in which arteriosclerosis is demonstrable or strongly suspected, the systematic compression of the carotid and the careful consideration of operative treatment are of special importance. In these cases, if no cerebral disturbance follows a prolonged treatment by compression, ligation may be carried out in spite of these contraindications.

After ligature threatening danger is to be combated by heart tonics. In case of recurrence after ligation of the carotid in mild, especially unilateral cases, when compression of the ophthalmic vein causes the murmur in the vessels to cease, resection of this vein may be done. In severe cases, especially bilateral ones with high-grade impairment of sight, ligation of the carotid inside of the cranium proximal to the point at which the ophthalmic artery is given off must be carried out. Before this operation is undertaken the patient's strength must be increased as much as possible. General anesthesia is necessary, and great care must be taken to avoid as much as possible the loss of blood. The operation in itself is very severe, but does not threaten any danger to the circulation in the brain. The ligation of both carotids is unqualifiedly to be avoided, as experience shows this to be very dangerous, and neither upon anatomical nor physiological grounds does it have any influence toward curing the condition.

## TREATMENT OF HOUR-GLASS STOMACH.

HÄRTEL (Archiv für klinische Chirurgie, Bd. 96, H. 1) states that the surgical treatment of hour-glass stomach consists either in the radical removal of the stenosed portion by resection, the artificial widening of the narrowed portion by plastic operation, or affording a passage by means of gastroanastomosis or gastroenterostomy. Resection is in almost all cases unusually difficult on account of numerous adhesions, especially in cases complicated by ulcer. In the author's series resection was performed in 10 cases of benign hour-glass stomach and in three cases of carcinoma of the stomach.

Of the benign cases six were cured, two improved, and two died. In the two fatal cases operation was carried out with the greatest difficulty, and the liver, colon, and pancreas were involved in the operation on account of the adhesions. Of the three cases of cancer, one was cured, one died later of recurrence, and one died immedi-

ately following the operation. Gastroanastomosis was performed in four cases.

The indications for gastroenterostomy are a large sac at the cardiac end of the stomach, marked adhesions which render resection difficult, and coexisting stenosis of the pylorus. This operation was done on three cases, all of which were cured. The best incision is the median one, which may in case of necessity be extended by a transverse incision through the left rectus.

#### HYPERTROPHIED PAPILLAE OF MOR-GAGNI CAUSING RECTAL SYMPTOMS.

MAGAREY (British Medical Journal, July 8, 1911) defines the papillæ of Morgagni as small, white, glistening projections, pyramidal or triangular, with the apices directed upward and inward toward the lumen of the gut, varying in number from one to six and situated either at the upper extremities of the columns of Morgagni or on the edges of the valves intervening between the upper ends of these columns, their length varying from one-eighth inch to one-third inch. They consist of myelinated and non-myelinated nerve fibers, with a considerable number of ganglion cells and very little connective tissue. They are covered by a stratified epithelium. When hypertrophied, the papillæ much resemble in shape and size the writing end of an ordinary lead-pencil. They must be distinguished from the small fibrous polyp that sometimes forms on the top of an internal hemorrhoid. They are regarded as accessory sense organs aiding and warning the anal sphincter. They are absent in the majority of patients. If hypertrophied they greatly augment pruritus-indeed, may be its sole cause, since this symptom is immediately relieved or cured by cauterization or removal. They cause pain, which may be located in the lower part of the back, or may be paroxysmally intense when the bowels are moved, passing off immediately thereafter. These symptoms are entirely relieved by cauterization. In some cases they cause a sensation of a mass in the rectum.

Cauterization is usually preceded by insufflation of an analgesic powder. A Kelly speculum is introduced into the rectum, and then withdrawn until the papillæ stand up at the inner end, when they can be successively touched with the electric thermocautery. One application is generally sufficient,

#### OPERATIVE TREATMENT OF FRAC-TURES.

Von Saar (Archiv f. klinische Chirurgie, Bd. 95, H. 4) reports the treatment of eleven cases of complicated and infected fractures of the extremities by means of operative treatment. Of these cases eight were cured, in two the results were unfavorable and amputation was performed, and in one the result of the operation was unfavorable and death occurred. The method of treatment consisted in enlarging the skin wound, laying free the ends of the fragment, turning them out of the wound at an angle of 60 to 90 degrees, and fixing

them temporarily in this position. The wound was then cleansed, bone splinters removed, and the fragments wrapped up in moist gauze. The cavity in the soft part was then tamponaded with balsam of Peru. Dressing was done daily until all inflammatory reaction had disappeared and the wound had begun to granulate. Then the bone ends were replaced by means of extension or resection, held in place by a plaster cast, and further treatment carried on according to the usual method. plan of treatment is suited to those cases of severe infection of the extremities in which the local condition appears to be unfavorable to the usual methods of treatment, or when under the usual treatment the inflammatory reaction shows a progressive tendency. This plan of treatment must not be undertaken too late, or until symptoms of general infection supervene. By means of this method it is possible to save extremities which under other methods of treatment would have to be amputated.

### REVIEWS.

SERUM DIAGNOSIS OF SYPHILIS AND THE BUTYRIC ACID TEST FOR SYPHILIS. By Hideyo Noguchi, M.D., M.Sc. 14 Illustrations. Second Edition. J. B. Lippincott Company, Philadelphia and London. Pp. 238. Price \$2.50.

The first edition of this work was reviewed in this journal May 15, 1911. At that time the general purposes and plans of the work were fully discussed; we heartily commend the publication, and now congratulate the author upon his opportunity to present a second edition within a year.

The present volume is by no means a reprint. The first nine chapter headings are identical with those of the last edition, although much new matter has been intercalated and considerable additional detail incorporated, thereby greatly enhancing the value of the publication. The earlier chapters of the work, dealing with principles upon which the practical application is based, are but little altered—in fact, the first thirty-four pages are essentially iden-

tical in the two editions. Each succeeding chapter, however, shows numerous alterations, many of which are highly important. Chapter XII, dealing with the effect of treatment upon the serum reaction of syphilis and embracing nineteen pages, is Concerning the administration of arsenobenzol Noguchi concludes that the intravenous injection of an alkaline solution is the best procedure and the subcutaneous administration the worst (p. 146); the intramuscular injection is less effective than the intravenous. Although, during treatment, positive reactions frequently become negative, the average of negative reactions in the cases studied by Noguchi was only 33.7 per cent. In cerebrospinal syphilis the reaction becomes weaker, but does not disappear. Salvarsan influences the symptoms more promptly than the reaction. promptly cured cases the reaction disappears in from two to five weeks, although it may remain positive much longer. In 102 cases studied there were 10 relapses; recurrence could always be detected by return of the reaction, which was diminishing until relapse occurred. One patient had a second relapse.

The appended glossary remains the same as in the first edition; the bibliography has been more than doubled. The quantity of new matter may be appreciated by the fact that the present volume contains 65 pages more than the first edition. The closing paragraph of our review of the first edition may with propriety be applied to the present: "For the purposes for which the volume was written it may most cordially be indorsed, and in addition it should be read by all those interested in the practical applications of our knowledge of immunity to diagnosis and to treatment."

W. M. L. C.

CASE HISTORIES. By Richard C. Cabot, M.D. Second Edition, Revised and Enlarged. W. M. Leonard, Boston, 1911. Price \$3.00.

Those who are familiar with the first edition of this book will recall that it was gotten up on a plan hitherto not employed. The author selects 100 case histories which he thinks well describes this number of typical cases in general medicine, covering the infectious diseases and diseases of the gastrointestinal and urinary tracts, diseases of the circulation, respiratory system, the nervous system, etc. The final chapter has been entitled "Notes on Drug Therapy," and is designed to provide information which the histories of the individual cases lack. Judging by the rapid sale of the first edition, the book has met a want of the medical profession. Dr. Cabot is so well known as a careful clinical observer and accurate recorder that full confidence can be placed upon many of the opinions which he expresses.

In looking over the list of medicines used in the medical wards of the Massachusetts General Hospital, which is found on page 279 under the heading of "Drugs Believed to Have a Specific Action in Relation to a Particular Disease," we note with consid-

erable interest that pancreatic extract occupies this position, in the mind of the author, in certain types of pancreatic disease. This is a very general statement. If employed as a digestive agent when pancreatic secretion is lacking, there can be no doubt of its efficiency, but in the important diseases of the pancreas we believe that it has proved of little value. Under the title of "Drugs Designed to Improve Circulation and Remove Edema," we note with hearty accord the statement that the tincture of digitalis employed should be physiologically tested. That pilocarpine is a good remedy for this purpose we think is very doubtful. It certainly never improves the circulation, and it is unsafe in edema in cardiac disease. We are much interested to learn that strychnine, "though doubtless used too much," has, in the opinion of the author, "stood the test of time as a heart tonic in fevers and neurasthenic states." This is a statement which we think requires qualifica-A few doses are often useful, but when continued over a long period of time we believe that strychnine is harmful when given in the manner in which Dr. Cabot recommends it. ·

A MANUAL OF PHYSIOLOGY. By H. Willoughby Lyle. Oxford University Press, 1911. Duodecimo, xvix, 747 pp.

This little book contains a large amount of information in a small space, and the material is well up to date. In most respects the more recent additions to physiological knowledge are given a place in this manual, and in all instances this has been done carefully, avoiding the patched appearance which some manuals acquire with the progress of science.

The arrangement of the book does not seem satisfactory from a pedagogical standpoint. It begins by describing an ameba, and follows with cytology, chemistry of the foodstuffs and enzymes before taking up diet and digestion, circulation, respiration, metabolism, heat, excretion, nervous system, muscle, special senses, psychology and reproduction, in the order given. The book is obviously intended for a compact résumé

rather than a text-book, as the physiologist can easily realize for himself by reading the chapter on the psychical faculties. This chapter is also too isolated from the rest of the book. In many places throughout the volume different topics are so closely packed as to make rather uncomfortable reading. On the other hand, the work contains many interesting touches and gleanings from the allied sciences of chemistry, bacteriology, pathology, diagnosis, etc., that go far to counterbalance this defect.

The author has dealt very fully with chemical matters, including tests for the presence of physiologically important compounds, but very sparingly with histology. The statement (p. 15) that "alanine is a constant constituent of all proteins" is hard to reconcile with the statement (p. 16) that "leucine is, with the exception of argonine, the most wide-spread of all the amino-acids which go to make up the protein molecule." It is also difficult to see how the "diagram to show that K. C. C. is greater than A. C. C." really shows anything except the difference between an "ascending" and a "descending" current. A. P. B.

DISEASES OF THE SKIN AND THE ERUPTIVE FEVERS. By Jay Frank Schamberg, M.D. Second Edition, Revised. Freely Illustrated. The W. B. Saunders Company, Philadelphia, 1911. Price \$3.00.

This excellent book, to which we referred in terms of praise when the first edition appeared, now comes out in a second edition four years after the first. chapter upon Pellagra has been much amplified. Vaccine therapy also receives thorough consideration, and the various forms of treatment by refrigeration, notably the use of solid carbon dioxide, are discussed. The article on the treatment of syphilis has been entirely rewritten in order to present an adequate picture of the use of salvarsan and other modern methods. There is also a chapter on the Wassermann reaction. A considerable number of illustrations are new, and notwithstanding the fact that they are black and white, they are remarkably accurate and clinically useful. Throughout the book numerous hints as to minute details concerning the technique of methods, diagnosis, and treatment are found. It is an excellent book for the practitioner.

Personal Hygiene and Physical Training for Women. By Anna M. Galbraith, M.D. Illustrated. W. B. Saunders Company, Philadelphia, 1911.

We are told in the preface that the aim of this work has been to present in a clear and concise manner the fundamental physiological laws on which personal hygiene is based, together with the practical detailed directions for the proper development of the body and the training of the physical powers, their highest degree of efficiency by means of fresh air, tonic baths, prepared food and clothing, gymnastic and outdoor exercise, so that the tissues will be placed in the best possible condition to resist disease. A few rather crude illustrations are scattered through the volume. Plates showing the female form as shown in classical statuary, such as the Venus de Milo, are inserted, and there are a considerable number of plates showing posture and exercise which give good ideas as to what should be done to develop the different muscles of the body. Then follows another series of plates showing postures in various types of dancing. The book is one from which the physician can glean much upon which he can advise his patients, and is written in such a form that it can be given to an intelligent patient with advantage.

PHYSICAL DIAGNOSIS. Its Principles and Practice. By John C. DaCosta, Jr., M.D. Second Edition, Revised. Illustrated. The W. B. Saunders Company, Philadelphia, 1912. Price \$3.50.

Dr. DaCosta having been engaged for a number of years in teaching this branch of medicine, is well prepared by reason of his labors not only to write a book upon Physical Diagnosis, but in this second edition to bring it well up to date. The book is one of the most complete, considering its size, which is to be found in the market. Opening with a discussion of the various methods which are employed in demonstrating physical signs and studying symptoms, it proceeds to a discussion of the

physical signs of various diseases. Almost every page is illustrated. The poorest illustrations in the book are those which deal with pathological specimens, but, after all, these are not the most important illustrations in a book of this character. We have no doubt that the present edition will prove as popular as the first.

CLINICAL DIAGNOSIS. A Manual of Laboratory Methods. By James Campbell Todd, Ph.B., M.D. Second Edition, Révised and Enlarged. The W. B. Saunders Company, Philadelphia, 1912. Price \$2.25.

The first edition of Todd's Manual appeared in 1908, and was designed to present clearly and concisely the various laboratory methods which are in use in clinical medicine. It is by no means as exhaustive as some of the larger works upon this subject, but it is eminently practical and concise. Doubtless there are many physicians who have not the time to study the larger books who will find this a most useful manual for constant reference. The present edition has been brought well up to date.

A TEXT-BOOK OF MATERIA MEDICA FOR NURSES, INCLUDING THERAPEUTICS AND TOXICOLOGY. By George P. Paul, M.D. Second Edition, Thoroughly Revised. W. B. Saunders Company, 1911. Price \$1.50.

As may be gathered from its title, this book deals with materia medica in a very brief form, but in an adequate manner, for the class of readers or students for which it has been prepared. It also gives the various remedial measures other than drugs which are commonly employed by physicians and nurses. The closing pages of the book deal with the strengths of drug preparations, synonyms of drugs, weights and measures, and a dosage table.

MINOR SURGERY. By Leonard A. Bidwell, F.R.C.S. Illustrated. Published for the University of London Press, Ltd., by Hodder & Stoughton & Henry Frowde, London, 1911.

This excellent book, which is an amplification of the course given by the author at

the West London Post-Graduate College, is designed as a handy reference for practitioners and students. Under scrubbing the hands the author considers that the most efficient method of disinfecting them is to thoroughly rub them with a solution of biniodide of mercury and methylated spirit: In a book of this kind the strength of the solution should be given. Horsehair is regarded as the best material for suture. kept in 1:20 carbolic solution twenty-four hours before use. Saturated solution of picric acid is considered the best application for burns. Injections of bismuth are advocated in the treatment of sinuses. describing the subcutaneous method of injecting large quantities of salt solution a somewhat futile way of maintaining temperature is advocated. A cannula pictured for intravenous injection is not such a one as would prove highly reliable; nor is the proctolysis appliance described one to be selected. Corns and warts are cured by treatment with solid carbon dioxide. There is an excellent summary of methods of treating ingrowing nails. The technique of salvarsan injection is given with fairly satisfactory detail, as is lumbar puncture. Harelip is briefly touched upon, but not the most approved way of applying straps for the purpose of preventing pull upon the There is a chapter devoted to sutures. Minor Surgery of the Urinary Tract, in which the removal of a pin from the urethra is described by means of illustrations. Under Minor Surgery of the Rectum is classed the treatment of piles. Plasterof-Paris splint is described in considerable detail. There is an appendix dealing with vaccination, von Pirquet's test, how to obtain a sample of blood for examination, Wassermann's reaction, Bier's congestion treatment, removal of wax from the ear, and the treatment of fractured femur in infants.

The book contains much that is serviceable to both the hospital interne and the practicing physician.

### CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The New Year has opened inauspiciously in the labor world with the threat of a national strike in the coal-mining industry. Reports of wintry weather from the other side of the Atlantic have raised fears on this side that the present cold snap is ushering in a period of hard weather. If such prove to be the case, the threat of the coalminers will become the more effective, for they appear to be playing a game of bluff, their coffers having been depleted by recent costly strikes. As, however, the miners are bound to give a month's notice of their intention to strike there is still plenty of time for conciliatory measures.

The Royal Commission on Tuberculosis have issued another instalment of the Appendix to their final Report, which contains complete details of the experiments and observations upon which the conclusions of that Report were founded. This volume. which owing to its fulness of detail and accuracy with which the experiments are described will prove of great value to other workers, gives the results of the investigations into the characters of viruses obtained from cases of lupus. Cultures obtained from human cases of lupus were tested upon the calf, rabbit, monkey, and other animals. The general result has been to show that cultures from the lupus viruses fall readily into one of the two main divisions as far as their cultural characters are concerned, but experiments on animals have shown that few of the cultures possess the degree of virulence which their characters would indicate. Of nine cultures which grew like bovine tubercle bacilli only one was found to possess the high virulence with which such growth would usually be attended. As the result of exhaustive experiments the conclusion was reached that the lupus type of bacillus cannot be regarded as an intermediate stage between the

bovine and the human types, but that the bacilli of lupus which approximate to the human type are really degenerate forms of that variety, and must not be regarded as intermediate forms, or as standing in any other relation to the types from which they differ in cultural characters.

The agitation against the National Insurance Bill still goes merrily on. The Reform Committee of the British Medical Association has issued a manifesto to the profession in general and the members of the Association in particular, giving an outline of its policy and objects. The committee has been organized by those who consider that the present Council of the B. M. A. have betraved the interests of the profession by allowing themselves to be influenced by political considerations and by not having secured the minimum demands which were laid down in a mass meeting of the profession as necessary before they would cooperate in working the Act. The committee is of the opinion that the present Council must be either "mended or ended" before the confidence of the members of the Association in their official leaders can be restored. The existing Council think that the matter of remuneraton for medical services may now be left in the hands of the Insurance Commissioners to be dealt with in their regulations, but the Reform Committee directly opposes this policy, and is of the opinion that the best method of obtaining the end in view is by the promotion of an Act of Parliament through the British Medical Association amending the Insurance Act in such a manner as will embody the minimum demands of the profession. The Association has announced that already between 26,000 and 27,000 signatures have been appended to the undertaking drawn up with the object of consolidating the attitude of the profession toward the Act. As it is estimated that of the 32,000 practitioners in Great Britain only 24,000 are available for service under the Act, the number of undertakings is more than enough to make that measure a dead letter as far as the medical benefits are concerned. serious loss with which hospitals are threatened is emphasized by the chairman of the London Hospital in an appeal to the public to be more generous in their subscriptions. He complains that many people, alarmed at the Insurance Act, are already withdrawing their subscriptions, while as yet no payments have had to be made under the Act. In the meantime the hospitals have their usual expenses to meet, and it is possible the number of patients to be treated may increase. It is pointed out in the appeal that the Act makes no provision for the more serious illnesses which cannot be treated at home, nor for operations which require the experienced surgeon and the fully trained nurse. For all these cases the hospitals must still make provision, and if the public refuse the support they have hitherto given all voluntary institutions will have to go on the rates or become state managed.

Canon Henson recently gave a most interesting lecture on "Christianity and Faithhealing." He said that an attempt was being made to bring within the categories of modern science the persistent phenomena of "spiritual healing," and that there was a tendency to materialize religion under the pretence of spiritualizing science. The lecturer pointed out that faith-healing was coeval with religion itself, and was in no wise distinctive of Christianity, that it appeared to be limited in its efficacy and to be identical in all but name with healing by means of suggestion, and that therefore it offered no real exception to the known procedures of nature. That faith-healing has no necessary connection with moral excellence in either the "healer" or the "healed" is proved by the circumstance that Charles II. was the busiest "healer" on record. He touched for the king's evil over 92,000 scrofulous persons, and it is instructive to note that while in no other reign were so many people touched for scrofula and so many cures vouched for, in no other reign did so many people die of that disease. In conclusion the lecturer observed that the progress of

medical and surgical science had been conditioned throughout by its emancipation from theological presuppositions, and that it was incredible to think that there could be any return to the old bondage.

The new government order for the compulsory notification of consumption has raised several important questions of local government and taxation. At present the cost of the doctors' fees for notifying infectious diseases is spread equally over the whole of London, but the present order has been framed in such a way that the expense of administering it will fall upon the City of London and upon each metropolitan The heaviest burden will thus fall on boroughs in which the ratable value per head is low and the rates are high. In these cases overcrowding is common and the death-rate is usually high. It would seem that this service is one to which the principle of equalization of burden is specially applicable. A book has just been published entitled "The Control and Eradication of Tuberculosis," which contains a series of international studies of the working of hospitals and sanatoria in different parts of the world. These studies should prove of great interest to all those who have taken any part in the great anti-consumption crusades which are now being waged in practically every civilized country in the world.

#### PARIS LETTER.

BY M. A. C. TUCKER, M.D.

In French medical circles attention has been drawn to a rather curious medicolegal action which has just been decided in Austria. To put the case in a nutshell, civil proceedings were taken against a gentleman who had used his influence over a friend who had been grievously wounded in the foot, the wound subsequently becoming gangrenous. The doctor told his patient that the only means of saving his life was to have the limb amputated, to which the sufferer readily consented; but the friend in question, chancing to come in a

little later, used so well his eloquence to dissuade him from submitting to the operation that the unfortunate man rescinded his former decision and refused pointblank to allow the surgical operation to be performed, and soon departed this world in consequence. The grieved family sued the meddler, who for his interference got mulcted in substantial damages, the jury charging him besides with being guilty of having-whilst the life of the man could still be preserved—given such ill and imprudent advice, and of having made use of such undue influence, that death had become unavoidable. For once, the old proverb, "The advisers are not the payers," is decidedly at fault in this case, for this particular counselor, after having appealed to and exhausted all the jurisdictions of his country, has just seen all former judgments against him finally upheld by the Supreme Court.

It is illicit, ergo illegal, in France for a doctor or a surgeon to sell to another practitioner his ever-so-long acquired or established clientèle, the surgical or medical clientèle, as the law goes, "not being commercial or tradable items," for they depend chiefly upon the personal professional qualities of the person, and moreover in the confidence individually inspired. But taking into consideration certain clauses of such a contract, the Paris tribunals have just held that the cession of a dentist's cabinet stands perfectly valid when it carries in the agreement the leasehold rights of the establishment, with the additional mention clearly posted outside the premises and on all the stationery that the dentist has transferred his practice to another.

The French law of 1895 forbids expressly the use or the sale of any serum without leave from the state, which can only be obtained after it has been thoroughly tested by the Academy of Medicine and by the Pasteur Institute and favorably reported upon. The excuse put forward by a Dr. Regnier that an antisyphilitic serum of his, extracted from the blood of inoculated monkeys and sold only to qualified medical

men, on their personal demand, is no defense, and consequently Dr. R. was fined one hundred francs.

The Court of Cassation has recently delivered an interesting judgment in relation to the compulsory sanitary examination (visite sanitaire) of prostitutes. It determines that the simple inscription of the name of the habitual fille publique upon the police registers creates against her a presumption which can only be dismissed by properly established evidence to the contrary. In this particular case the appellant had invoked the motive that she had for some time abandoned the streets, urging that she was now married. But, in rejecting the woman's petition, the higher magistrates explained that such grounds should have been raised before the tribunal below, where the judge, after careful consideration, was fully entitled to decide whether it was a genuine and deserving case of rehabilitation. Meanwhile, the public's interests and health must be protected and the law take its full course.

The sempiternal controversy relating to the doctor's professional secret is far from being exhausted. One of the most delicate points for a doctor is the attitude he should adopt when questioned upon the occasion of a projected marriage, to give—as far as it is feasible-satisfaction to the legitimate desire of the family without betraying le secret professionnel. Evidently, medical men are unanimous in declaring that it is impossible to commit oneself under such direct interrogations, but many of them are in search of an expedient to satisfy all the interests at stake. In my personal opinion there is no possibility of that kind. Whenever you allow a third party to be informed of what you have learned about a person in the exercise of your medical capacity, you betray the medical secret, even if the third party receiving your confidence is a medical gentleman. It has been suggested that the medical attendants of both families in case of a prospective marriage could be called together and hold privately a sort of consultation, at the end of which they could

declare whether the wedding might take place or not. It is obvious that the thing is absolutely impracticable. It certainly could be done without disclosing the exact diagnosis of any particular disease, but in most cases the professional confidence would be broken, as the declaration of inability or incapacity of one of the two fiancés could be derived only from confidential information from one doctor to the other upon the anterior healthful state of his patron. Moreover, if such a consultation was held without the entire and full consent of all concerned, the aggrieved party. if any, would most likely become entitled to pretty heavy damages. But if, on the contrary, both families had willingly acquiesced in such a course, there would assuredly be no danger of legal proceedings, but the professional secret would none the less have been violated. As a matter of fact, no medical authority worthy of the name should be inclined to depart, generally speaking, from the most prudent reserve even toward his own client. On the other hand, if you speak to-day in favor of a perfectly healthy party, and if you refuse to speak to-morrow for another, the natural inference is that the latter is condemned by you. It is, however, quite comprehensible that, in such particular predicament, parents and guardians will be anxious to know a little about the state of the future bride or bridegroom, and it is hoped that in future such display of interest will be oftener manifested. The only possible way out of the dilemma might be either to obtain a certificate from one's own doctor which could be used or destroyed, or that the interested families, by mutual request and assent, should demand and exchange health certificates, the formality being accepted or declined, according to case and circumstances.

It is an averred fact that the French population is steadily decreasing by little and little. The subject is watchfully scrutinized by legislators here, and it is sorely evident that in a comparatively short period the nation will become steadily weakened if

large families are not helped and protected instead of being discouraged and heavily burdened as they are. In the present state of things, working classes in this country are completely unable to bear the multifarious charges attached to the bringing up of several children. Rent, food, clothes, and other items are nowadays so hard to procure that it is quite an impossibility for a workingman or an employee to cope with the most elementary daily requirements.

#### ALCOHOL IN TRACHOMA.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: Having read an article in your journal of October, 1911, on the treatment of "Trachoma with Carbon Dioxide Snow," and having had such good results in its treatment with alcohol, I thought I would write you explaining its use. I have not had the opportunity of using it extensively, but in my few cases it has proved so much superior to the old treatment with bluestone, silver nitrate, etc., that I would like to see it tried more extensively.

I use it as follows: After dropping some cocaine solution in the eye, as a local anesthetic, I evert both lids, dry them with cotton, and by means of a cotton holder I use the alcohol full strength, applying it thoroughly to all parts of the conjunctiva, being careful that none of it gets on the cornea, although if some did it would cause but little disturbance. This treatment is readily managed by any one who understands the technique of conjunctiva medication. After applying the alcohol a short interval is allowed to elapse before returning the lids to their place. The cases that I have found to respond most readily to this treatment are the same as those referred to by Dr. Harston, namely, the chronic and those in which there is scar tissue.

I was led to the use of this remedy by recognizing the germicidal properties of alcohol and its power to penetrate, and from the fact that the caustics usually employed do not reach to the seat of the disease.

SEWARD, NEBR. H. B. CUMMINS, M.D.

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### ORIGINAL COMMUNICATIONS.

#### THE TREATMENT OF EPILEPSY.

A Medical and Surgical Symposium.1

# THE MEDICAL TREATMENT OF EPILEPSY. BY S. WEIB MITCHELL, M.D., LL.D., F.R.S.

In opening the debate on a subject so difficult to confine within set boundaries as that with which we deal this evening, I propose to myself the strictest limitations. My desire is to know whether any others have been more successful than I in the treatment of epilepsy, and whether it is not desirable to pursue investigations along lines other than those which have been followed.

Our subject this evening is the *treatment* of epilepsy, which of course involves more or less of its diagnosis and enables me to set aside at once all cases of distinct trauma, where surgical interference becomes desirable. There remain for consideration all those cases of epilepsy which are various in type and are known as idiopathic, a term conventionally employed and which, it is to be hoped, may some day be set aside.

Treatment includes: First, the suppression of the symptom-complex by the use of drugs or other forms of general treatment; and secondly, the treatment during the brief period of the aura, which sometimes affords an opportunity to cut short the sequence of symptoms.

Let us deal with the first. We must, I am sure, feel a sense of therapeutic despair whenever a case of ordinary epilepsy appears for treatment at a clinic—nor does

<sup>1</sup>Read before the College of Physicians of Philadelphia, Feb. 7, 1912.

wealth make the situation much better. I must frankly admit that none of the remedial measures we apply for the general treatment of idiopathic epilepsy has any firm foundation upon reason or trustworthy experimentation on the lower animals. No man can tell me to-day why bromides prevent epileptic explosions; nor is there any theory as to the causation of epilepsy which is not contradicted by some of the phenomena of this puzzling disorder. Most rare are reflex epilepsies; I have seen but two, once from a bean in the nose, and once from a crushed testicle. Both were cured by operation, and were reported by Hinsdale. It is conceivable that in nerve centers normal or abnormal substances may accumulate until they result in irritative symptoms and discharges of neural energy. But how then could this sequence be arrested by a mere sensory stimulation, like a ligature on an arm, or by abruptly dilating the cerebral vessels with amyl? The explosions would only be put off for the minute; the activating poison would remain.

The ingenuity of therapeutics has become bankrupt in the effort to find drug cures for epilepsy. It is needless to run over them, and I limit myself simply to the statement of certain conclusions. One of these is that the bromides are useless in certain cases of the minor epilepsy (petit mal), which respond favorably to some of the coal-tar products. This was not an uncommon experience in my clinic, and has

been also observed in that of Dr. John K. Mitchell. Then there are examples of the lesser epilepsy which are made much worse by bromides; and also there are rare and inexplicable cases of the greater epilepsy in which bromides make the convulsions more violent and increase their number.

I may say that I have not found any great difference between the various bromides, such as has been asserted by some French observers, nor any special value in mixing them. For rapid action and for soothing purposes, I am of the opinion that the lithium bromide is the best. I state this with the doubt of self-criticism, because I myself introduced it into medicine. It is, however, the only deliquescent bromide, and contains the largest percentage of the agent bromine, which seems to be that which gives value to these salts.

It would be useless to talk to a set of men such as are here to-day in regard to the management of the doses of the bromides. Their deleterious effects are well known, and it is desirable, of course, to give just that amount of bromide which being added grain by grain on the return of attacks will finally prevent the occurrence of any attack. During this process of gradual increase you run against the occasional difficulty that effective doses, varying with the individual, may produce loss of memory, inertness, low spirits, and in rare cases forms of positive melancholia, maniacal excitement, and even suicidal or homicidal mania. You may play all the tricks you will, using arsenic, hot baths, and what not, and still vou will sometimes be driven to conclude that a man had better have epilepsy than be overdrugged with bromides. Of course, where the attacks come at long intervals, this is the obvious course.

Although the effects of bromide on the skin are annoying, they may generally be avoided if the person will bear full doses of arsenic and use hot baths. There is, however, a small percentage of persons who are so susceptible to the bad effects of these drugs that a dose of a drachm a day will within a week produce large rupial-like ulcerations, which so strongly resemble the

rupia of syphilis that when I first saw and described them I was for a time completely deceived.

As you patiently add grain by grain to attain the restraining dose, so must you at the end of two years without attacks as slowly withdraw the drug grain by grain.

I am saying nothing about other drugs, but there is one thing I do desire to say. I saw, when young, cases of epilepsy cured by nitrate of silver, but the nitrate of silver had to be given in doses which would astound the therapeutist of to-day in order to bring about the result in question. I recall a case in which I did cure the epilepsy, being a rash young man, by large doses of the silver salt, having previously obtained a written promise that no action would be taken if I blackened the man. He was cured, and blackened.

There is one salt of silver which will not change under light, and that is the ioduret. Whether it will be efficient in epilepsies to bring about good results, or will cause such gastric troubles as to prevent its use, has not been sufficiently tested.

I have avoided the luxury of the relation of personal cases, and beg you to consider that every statement I have made has strong and absolute foundation in observation and well-noted facts.

To turn now to the immediate prevention of individual attacks of epilepsy. I myself believe that epilepsy always originates in sensorial centres with a discharge from these centres, which is or is not recognized by consciousness. Such sensory discharges are referred to exterior organs, as when we have the sense of an aura rising up from the abdomen, or beginning as numbness or what not in the hand, or arising in the form of optical auræ or of olfactory or auditory impressions. In other words, I believe the aura always exists, but is unperceived in most cases, owing to the suddenness with which the motor discharge follows. I want to make this matter clear to you, because I do not think it has been fully enough expressed in this form elsewhere; or, if so, will bear repetition. I regret not to be able to give you all the evidence upon

which it rests, but I think a single statement will make it clear to a set of experts such as are here present, and will make some of you wonder why it has not been more fully recognized. It is supported by the fact that an epileptic having distinct auræ may go on with lessening of the interval between the onset of the auræ and the convulsive attack and loss of consciousness until the time between becomes too brief for memorial registration or any useful intervention. I hope that I make myself clear and that you will perceive the importance of what seems to me to be a novel thought, open to attack, and perhaps to defeat, by larger observation; but so far as treatment is concerned, it was necessary to speak of it.

Before mentioning the use to made of the auræ and what opportunity they offer in a small percentage of epileptic cases. I want to say a word as to a set of phenomena which have been. I think, improperly classed, especially by Oppenheim, as also being of the nature of auræ. Thus, there are many persons who are habitual epileptics, who, especially after the disease has existed for a considerable time, have within a day before the attack certain definite sensations or conditions, which are occasionally of value in enabling them to anticipate and be ready for the attack. To illustrate: Certain people before an attack, a few hours before or a day before, develop either a condition of slight excitement or a state of sensation of being agreeably well, which the French call bienaise, or wellbeing, to put it in good English. You are familiar with the fact that this feeling occasionally precedes certain headaches. A more distinct symptom is the curious personal odor which in some cases precedes an attack, and may take the unpleasant form of horribly bad breath, which is unfortunately also one of the annoyances due to the use of bromides. This which I speak of now is described as being different, usually as having an acid odor, but the chemistry of odorous emanations has yet to be studied. There are various other forms of the general or local states which precede the aura and the fit, but I do not propose to dwell upon them here. I speak of these prodromes only because the therapeutic opportunities they present are often overlooked.

If now we are to help a person in the few moments which precede the epilepsy, two or three things are necessary, and they unfortunately exist only in a moderate percentage of cases. These are: An aura long enough to permit of something being done, capacity on the part of the sufferer during that time to use this interval, and the discovery of what is the best form of interference. These interferences to be valuable are all, with perhaps one exception, such as affect the sensory stage of the connected series of symptoms called epilepsy. Some of them are as old as knowledge of the disease—that is, such as putting salt on the tongue, a ligature around the arm, and the like. I shall mention only those which are novel in their mode of employment or in kind.

If you have to deal with an epilepsy of Jacksonian type or originating in a sensation confined to one limb, a sudden ligation of that limb will very frequently arrest the attack. How to bring this about when the aura is brief is the question. I succeeded very well in one remarkable case, by having a spring arrangement worn on the left arm and set free to act by pulling a cord which was fastened at the wrist. A sharp pull on this cord released the spring and pretty violently clamped the arm. This usually resulted in checking the attack.

The two other points to which I shall now allude are: First, that a great change in the mode of life sometimes results in curing epilepsy. Thus I have known two cases in which service in a cavalry regiment during the civil war did put an end to epilepsy. I have made all sorts of efforts in the way of diets, starvation, the milk cure, the meat cure, absence of salt, rest, and what not, without much good. Generally the burden of unhappiness is needlessly increased by forbidding tobacco and coffee. I have had the frequent experience known to others that a change of remedy

or locality, such as putting a patient in a hospital to study the every-day phenomena of attack, were followed by long periods of arrest of the disease.

And what of the use of nitrite of amyl in the treatment of the attacks? This. I am perfectly sure, will arrest attacks of epilepsy, if the aura gives time and opportunity. Neither need there be any fear in the use of this drug, although the sensation it causes in the head is alarming. I have seen it pretty recklessly employed by a rough hospital nurse, with the effect of stopping successive attacks in the status epilepticus. When I first used this drug in 1871 (and I was the first to employ it), I personally used it in an attack I witnessed, and was completely satisfied of its extraordinary power. My paper appeared in 1872, but it has since been rediscovered by Crichton Brown and one or two other people, about which I have not further concerned myself.

The condition known as minor epilepsy (petit mal) which sometimes lasts for minutes is not as easy to end by the use of amyl nitrite as is the aura of the greater epilepsy.

I have not dealt here with the reason why the nitrite of amyl cuts short the series of phenomena which accompany the onset of attacks. The great pallor of face which ushers in the fit suggests how it acts, and this alone is sure, that if you can thus or in any way bring on flushing and dilatation of the arterioles, you may so interrupt these sequences as to prevent the storm of convulsive movements which would have followed. Also, it is true that if we can control often enough the occurrence of convulsions, we may lessen the probability of their continuance or recurrence. Apparently we may break up what one crudely calls the convulsive habit.

Finally, there is one other matter which I consider important. It is not my discovery. I do not now remember who told me of it, but it was a physician I met somewhere on a train in New York State. He told me that having been subject to a grave form of epilepsy, preceded by very horrible

olfactory subjective odors lasting fifteen or twenty minutes, he discovered that by taking a long inhalation, holding his nose and then forcibly contracting the chest, he could check the progress of the aura and prevent altogether the convulsions which without this measure inevitably followed. He assured me that he had thus succeeded finally, without bromides, in altogether stopping the epilepsy, and he no longer employed or had need to employ the method in question. This is almost my only useful contribution this evening, and I think it worth while to state it, because I have seen a number of patients able to relieve themselves by this means. If you will employ it on yourselves, you will see that it flushes the face, and therefore in all probability flushes the brain just as amyl does, and thus interrupt's the sequence of events which it seems must develop in turn before the convulsive symptoms occur. I had a letter last week from a lady who by this means, having a long period (several minutes) of remarkable aura in the forms of rings of light before her eyes, has been able to check all her attacks during a year with one exception. I ought to say that she finds she is thus able to get along with one-third of the quantity of bromide which before was necessary to prevent recurrences, and which left her a wretchedly melancholy person with increasing difficulty of locomotion. I therefore suggest in these cases a moderate amount of bromide, with some effort to use the method in question. It is one which requires a little training.

I think that I have here said everything which it is worth while for me to say, but desire to add that with the exception of these slight hints as to the auræ, I want most to direct attention to the fact that probably all attacks have auræ and all attacks have a sensory origin.

To conclude, I ask myself and you, what is the effect on the brain cells of excessive use of bromides? I ask also is it not possible that they act locally on the vessels of the sensori-motor areas so as to prevent accumulation of a convulsant substance, and so give time for its slow elimination? My

question is purely hypothetical, but admits of some defense, and in fact epilepsy offers many unanswered questions.

#### THE MEDICAL TREATMENT OF EPILEPSY.

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The term epilepsy embraces a number of symptom groups which, while closely allied, differ radically from one another as to their pathogenesis. Among them we have first the so-called idiopathic or essential epilepsy; secondly, epilepsy due to the ingestion of poisons, such as alcohol and lead; thirdly, epilepsy the direct or indirect result of infection; fourthly, epilepsy due to gross organic disease of the brain, such as brain tumor: and lastly, epilepsy the result of trauma. Obviously the consideration of the subject in its entirety is unsuited to an evening's discussion, and I will limit that which I have myself to say to a discussion of true epilepsy—i.e., the idiopathic or essential form, the other forms being in reality merely symptomatic disorders.

When we study patients suffering from essential epilepsy, we are at once impressed by the fact that the larger number, if indeed not all, present the earmarks of retarded or aberrant development. It is hardly necessary to call attention to the peculiarities presented by the structures readily accessible to observation, such as the skull, the palate, the teeth, the ears, the limbs, the digits; nor is it necessary to point out that if anomalies, arrests, and deviations are present in surface structures, it is legitimate to infer that they are present in deeper structures as well. I presented many years ago before the Philadelphia Neurological Society a series of twelve brains of confirmed epileptics, all of which presented more or less striking anomalies of convolutions and fissures. It is very probable that other morphological anomalies obtain elsewhere in the organism, and it does no violence to the facts to regard epilepsy in its essential forms as distinctly a morphological disease, as one occurring in defective

organisms, organisms in which evolution has been incomplete or aberrant, and in which we have reason to believe that metabolism also is not normal and that the individual suffers from the formation and retention of toxic substances.

Time will not permit of a discussion of the facts bearing upon the theories of the toxicity of epilepsy. Studies in metabolism, as Sarbó¹ points out, while they promise something in the future, have failed to reveal any product of metabolism as the constant accompaniment or cause of epilepsy. However, as is well known, not only the seizures but also the symptoms of the intervallary period strongly suggest a toxic cause. Among the symptoms present during the intervals suggesting toxicity are mental depression and morbidity, emotional irritability, heaviness, slowness of thought, headache, sensations of weakness, and less commonly tremor and muscular twitchings. That, however, convulsive seizures may occur without toxic cause is proven by the convulsions artificially induced by A. J. Parker and myself in our own persons and in those of some of our colleagues. Our experiments were described in a paper read before the Philadelphia Neurological Society in 1884, and were also subsequently demonstrated to a small group of Fellows of the College. The method consisted in bringing about rapid nervous and physical fatigue by special strains, and while toxicity could not have played a rôle in the convulsions so induced, I notwithstanding believe that in the true epileptic convulsion the facts are in favor of toxicity. At any rate, in the treatment of epilepsy the factor of possible if not probable toxicity should receive serious consideration. Again, if in addition it be true that the epileptic is morphologically defective, this fact must for obvious reasons be equally borne in mind.

The treatment divides itself into a general or physiological treatment, and a treatment based upon drugs.

The physiological treatment resolves itself into the following subdivisions: First, treatment directed toward the elimination of waste and toxic substances; second, exercise; third, diet; fourth, the maintenance of the general physical and mental health as near the physiological level as possible.

Under the first head we should bear in mind that it is important to keep open all the avenues of elimination. The bowels should be opened once or twice daily; the kidneys should be kept active by the free ingestion of water, and the skin should be kept active by tepid sponge bathing or by brief tepid immersion baths followed by a gentle rubbing. The idea of the bath should be not to produce a reaction or a possible tonic effect, but simply to encourage the activity of the skin as an emunctory organ. Baths which produce profound reactions are contraindicated.

Further, it is important, I am convinced, for the patient to spend as much time as possible in the open air in order that proper oxidation of the tissues shall not be impeded. Equally necessary is it for the epileptic to sleep in well-ventilated rooms. Out-of-door sleeping I do not believe to be necessary, though of itself it is not to be decried. Exercise I consider of the utmost importance, but this exercise should be gentle: it should never be violent and should never be of such a character as to surcharge the tissues and fluids of the body with waste products. Excessive exercise does harm. Overfatigue, as is well known, is a direct exciting cause of epileptic seizures. The indication for exercise in epilepsy is, first, that the exercise shall be gentle, and secondly, that it shall be taken in the open air; by it the intake of oxygen is increased, the oxidation of the tissues is promoted, and indirectly in this way elimination. Marked fatigue must always be avoided.

The question of the diet of epileptics is a very difficult one. The diet must be adapted to each individual case. Certain general principles, however, can be considered as established. First, it has been shown that in many cases the seizures are less frequent when the red meats, and perhaps the white meats also, are diminished, and in some cases when they are excluded. For instance, Alt<sup>2</sup> noted in studying his cases of epilepsy that the number of seizures

became less pronounced when he restricted his patients to a vegetable diet, and that they diminished most when they were upon a strict milk diet. In children he noted that the attacks became least frequent when the latter were given sterilized milk. Blumhardt<sup>8</sup> noted in twenty-one cases of epilepsy in children that a vegetable diet was followed by marked improvement. However, J. and R. Voisin,4 basing their conclusion upon clinical experience, maintain that a meat or nitrogenous diet, no matter what the form of the latter, is not capable of increasing the number of attacks, provided the amount is moderate. Rosanoff<sup>5</sup> also concludes that a mixed diet does not exert any more influence upon the attacks than does a purely vegetable diet. He maintains that an exclusive vegetable diet in epileptics is not indicated. He noted, however, that either an excess or deficiency of the proteids had an unfavorable effect upon the attacks. He noticed the most unfavorable effects when there was an excess of proteids and a deficiency of the carbohydrates in the diet. The practical results of his investigations are that we are to give the epileptics as much carbohydrate and fat as they are able to assimilate, and as much proteid as is necessary to the maintenance of the nitrogenous equilibrium, but no more.

Lallement and Rodiet<sup>6</sup> studied in their epileptics the influence of diet on the amount of skatol and indican in the urine, and they compared their results with the results obtained after an 'ordinary diet. They found that with a vegetable diet there was a marked reduction in the amount of uric acid and chlorides. The indican disappeared almost completely. Skatol was, however, present in the same amount as in the mixed diet. On the resumption of meat, the amount of indican and uric acid again increased. Rodiet noted a favorable effect of the meat-free diet on the mental condition of epileptics; they were less irritable and excitable than on a meat diet. Shanahan8 insists upon a careful examination of the digestive tract and a study of the metabolism, examination of the bowel movements, and an analysis of a twenty-fourhour specimen of urine. Baugho claims that a diet poor in the purin bodies is not best for all epileptics, but is appropriate to only a part of them. Certain it is, however, that a rich purin diet exercises an unfavorable effect upon the metabolism and the health of the patient. Rodiet, Lallement, and Roux, 10 who instituted in eleven epileptic women a strict vegetable diet, point out that it is incorrect to attribute the number of the attacks solely to gastrointestinal autointoxication. They point out that the diet must be carefully adapted to the condition of the digestive tract.

In my experience it is wisest in epileptics not to adopt too strict and too rigid a diet. The diet should be a mixed one. It should contain vegetables and milk in liberal amount. It should contain the white meats. The red meats should be given sparingly. I have, however, occasionally found that if in epileptics who have been accustomed to a meat diet, the meat be withdrawn absolutely, the number of the attacks is in-In other words, some patients creased. will improve with the diminution and others with the absolute withdrawal of the meat. With regard to the carbohydrates, I am myself inclined to adopt a middle course. I do not believe it wise to surcharge the intestinal tract of the patient with starchy foods. My experience is not in accord with that of Rosanoff, that we should give an epileptic as much starch and fat as possible, but that the quantity of starchy food should be moderate in amount. Inasmuch as the starches are the equivalent of sugar and are therefore muscle foods, and inasmuch as the epileptic patient is not to exercise strenuously, the amount of starches indicated is not large; further, starches in large amount favor digestive disturbances. As regards fat, a normal amount of fatty food may be given. As a rule the patient's own inclination can be trusted in this respect.

It goes without saying that in every case digestive difficulties should, as far as possible, be corrected, and especially should free evacuation of the bowels be insisted upon. I am not, however, an adherent of the theory of intestinal intoxication as an

explanation of the epileptic seizure. In my own belief the cause of the autointoxication of epilepsy lies far deeper; it is possibly to be sought for in an as yet unexplained disorder of metabolism, possibly a disturbance of some gland of internal secretion.

There can be no doubt that by the carrying out of a rigid hygiene—i.e., by the keeping open of the avenues of elimination, by favoring the oxidation of the tissues, and by the avoidance of an excess of foods which hamper or encumber oxidation and metabolism in general—the number of the seizures is greatly influenced, and this irrespective of the administration of the bromides.

Time will hardly permit of an extended discussion of the occupation of epileptics. That the occupation should be simple in character and not involve nervous overstrain, that it should be carried out in the open air, that it is ideally presented by epileptics who spend their time upon a farm or garden, or in an epileptic colony, there can be no question. Every one of us has noted that nervous overfatigue, that sudden psychic or emotional excitement, may lead to an epileptic attack, and it goes without saying that the life of the epileptic should be made as placid as possible.

There can be no doubt that now and then simple physiological methods of treatment result in a lessening or even a prolonged remission of symptoms. I have had several such experiences. We must bear in mind also that every now and then, though rarely, epileptic attacks cease spontaneously.

In regard to the giving of medicines, I wish to state most emphatically that I am not one of those who decry their use. In drugs we possess a most valuable means for the diminution and often for the control of the seizures. I am of the opinion, based upon a not inconsiderable experience, that the harm done by drugs has been grossly exaggerated. The deterioration noted in an epileptic is properly to be ascribed not to the treatment or drug that he is receiving, but to the progress of the insidious disease from which he suffers. We must remember that epilepsy is not purely a paroxysmal

disease; it is a continuous disease. The epileptic is an epileptic whether he suffers from convulsions or not, and in the interparoxysmal periods he is the same abnormal individual as regards both his morphology and his tissue-changes as he is during his epileptic attacks; in the latter it is merely that a crisis has been reached. Degeneration probably goes on in the interparoxysmal periods as well as at the times of the seizures; though it appears that the frequent occurrence of the latter hastens the process. It is probably true also that the action of the bromides is less harmful than is the frequent occurrence of major attacks. and between two evils it is certainly wisest to choose the least.

The bromides, it will be remembered, were introduced by Laycock in 1853; their introduction constitutes, in my opinion, a veritable epoch in the history of therapeutics. To decry their usefulness is to deny the cumulative experience of almost sixty years. It is not, however, my intention to discuss the efficacy of bromides in epilepsy, but rather the important modification of the treatment introduced by Richet and Toulouse<sup>11</sup> in 1899.

We have all noted that there is in patients to whom we give bromides a tendency to bromide retention. This was long ago noted by Laudenheimer, who in studying a patient observed that of 80 grammes of bromide administered only 35 grammes were recovered from the urine. Of course some of the bromide must have been eliminated in other ways than by the kidney, vet the amount so eliminated must have been small. That there is a tendency to the retention of the bromides there can be no doubt, and this, as I have just stated, is in keeping with ordinary experience. Not infrequently, however, we fail to produce an adequate impression. The likelihood of such failure is greatly reduced if we institute the procedure of Richet and Toulouse. namely, that of chloride of sodium withdrawal. There seems to be an interrelation between the retention of the bromides and the elimination of the chlorides, and vice versa. Bromide accumulation occurs in pro-

portion to the amount of the chloride of sodium withdrawn. Again, it would appear that the bromides are more readily eliminated after chloride of sodium is resumed. Ulrich12 has shown experimentally that the elimination of the bromides in animals is enhanced by the giving of table salt. He also claims that the table salt rapidly removed the motor, sensory, and psychic phenomena of acute bromism. Bromide skin affections, he maintains, are rapidly dispersed by the administration of sodium chloride. He regards table salt as an antidote for bromism. If to an epileptic who is bromized and whose attacks have been controlled we give table salt, epileptic convulsions may recur. Frey18 also has shown experimentally upon animals that there is a relationship between the elimination of the bromides and chlorides in the urine, and that a similar relationship can be demonstrated in the presence of these salts in the blood. The withdrawal of the sodium chloride always caused a retention of the sodium Bromide always acted more promptly when the chloride had been withdrawn. The resumption of the table salt by the animal at once hastened the elimination of the bromide. Vice versa, the administration of the bromide causes the amount of chloride in the urine to be increased. The kidney, Frey states, seems to make no distinction between the elimination of the bromine and chlorine. It would appear that an excess of either or both cannot be retained.

A great many observers have noted beneficial results from the withdrawal of the sodium chloride in the bromide treatment of epilepsy. Among these may be mentioned J. Voisin, R. Voisin, and Krantz.14 Mirallié<sup>15</sup> has also had very favorable experience with this method. He believes that the withdrawal of table salt from the diet makes the nerve cells more sensitive to the action of the bromide. Lambranzi16 concludes, after a very careful and thorough study, that the method results in the great majority of cases in a decided reduction in the number and intensity of the attacks and at times causes them to disap-

pear entirely. He believes that the psychic condition of the epileptics is in the intervals of the seizures also beneficially influenced, and he points out that the extension of the treatment over a long time, for example three months, produces no unfavorable effect. Voisin and Krantz<sup>17</sup> weighed their patients and noted that there was at first, under salt deprivation, almost always a diminution in the weight of the patient, but that this loss of weight at once disappeared when salt was resumed. The practical point resulting is that if in the persistent withdrawal of the salt we find a diminution of the body weight, this is to be looked upon as an impairment of nutrition, which indicates a cessation of the salt deprivation treatment.

Kinberg<sup>18</sup> has published the results of thirty cases in which he employed the Richet-Toulouse method. He maintains that the treatment lessens the number and intensity of the attacks and tends to prevent the recurrence of the status epilepticus; secondly, that it often exerts a beneficial influence upon the mental state, and in this way prevents the occurrence of states of confusion and delirium. He believes that the method is contraindicated when there is disease of the heart, nephritis, emphysema. or adiposis; also if the patient lose steadily in weight the method is to be abandoned. Hoppe<sup>19</sup> points out that the bromides only become efficacious after they become retained, and dwells upon the importance of salt withdrawal. Muskens20 treated in all 180 patients, among them 40 inveterate cases. Muskens believes that disease of the heart muscle constitutes a contraindication to salt withdrawal. Turner<sup>21</sup> out of eight cases noted a favorable result in five. In three this persisted for three months after a return to an ordinary sodium-chloridecontaining diet. In three cases he noted an increase in the number of petit mal attacks. He did not observe any improvement in the psychic symptoms. The chief disadvantage of the treatment he thinks lies in its monotony.

J. and R. Voisin and Rendu<sup>22</sup> recommend a modified method of the Richet-Toulouse method. They give the patients for short periods small doses of bromide, then for short periods large doses of the bromide, both with the usual salt-containing nourishment. Then these periods are followed by equal periods of salt-free diet, but without the exhibition of the bromide salts. This modification does not appeal to me and I see no advantage in it.

Personally I have made use for some years of sodium chloride withdrawal and I share the opinions as to its value. patient as a rule becomes rapidly accustomed to the absence of the salt. After a time some patients begin to crave the salt. If so, salt may for a short time be permitted, but later again withdrawn. If the prohibition of the salt be too radical, there may result a marked loss of appetite and corresponding loss of weight. As in all other methods employed in diseases chronic and essentially incurable, the taking of the middle course, not too extreme in either direction, yields in the long run the best results. Measures such as the addition of bromides to the food itself, as, for instance, in the baking of bromide bread, so-called bromopan, I do not consider either necessarv or advisable.

Other points in regard to the use of the bromides may be summarized as follows: first, it is very important to use them early and in sufficient dose to control the seizures. It is a fact in accord with common experience that early in a case attacks can be more readily suppressed and controlled than later, and it should be our aim to prevent if possible by prompt and vigorous early measures the establishment of what may be called the convulsive habit. Secondly, the bromides should be given in sufficient dose and for a prolonged time. Gradually, especially in cases in which the general physiological plan of treatment already outlined is carried out, the dose may be diminished or even suspended for a time. We should bear in mind that the sudden leaving off of the bromide is unsafe.

An important point, I believe, in the administration of the bromides is to combine them with one of the glycerophosphate salts,

preferably sodium glycerophosphate. There is an increased waste of phosphorus in epileptics, and some such procedure would seem to be indicated. In my own experience the combination of the sodium glycerophosphate has a beneficial action. Under no circumstances can it do any harm.

The Flechsig method of treatment hardly merits special consideration. It consists in the administration of opium in increasing doses at intervals during the day for a period of several weeks, five or six, after which time the opium is suddenly withdrawn and bromide given in full doses. There can be no doubt that in some cases in which the bromides fail to control the seizures, the Flechsig method proves efficient. I have on a few occasions, in bad cases, made use of it with satisfactory results for the time being.

Time will not permit of the discussion of the numerous other drugs employed in epilepsy. Of not one can it be said that they equal the bromides in value, and one only do I deem worthy of special mention. and that is thyroid extract. Thyroid extract appears to have a real though limited value. Browning, Osborne, and Sajous have spoken of its use in suitable cases. As far as I am able to judge, it is in epileptic children with rather marked stigmata of arrest. with signs pointing to possible thyroid deficiency, that thyroid substance is valuable. It is occasionally valuable, however, in cases in which these stigmata are not pronounced. I think it extremely probable that its usefulness is to be ascribed to an increased oxidation of the tissues and a consequent destruction of toxic materials. It should be given in small doses over long periods of Large doses probably do harmindeed, they may add to the frequency of the seizures. Beneficial effects cannot be looked for save after prolonged administration. The seizures should in the meantime be controlled by broinides; sooner or later in given cases it will be found that the dose of the bromide can be greatly diminished and even for a time suspended. An interesting point that possibly has some bearing upon the use of thyroid extract in

the control or diminution of epileptic seizures and the possible rôle which increased oxidation plays in such a process, is the well-known clinical fact that in epileptics who suffer from a febrile infection, and in whom there is for the time being an increased oxidation of the tissues, no epileptic convulsions occur. It has been my own observation repeatedly that when an epileptic suffers from an attack of typhoid fever for instance, or indeed from any of the other exanthemata, seizures are absent during the febrile period and frequently for some time thereafter.

Bearing upon the possible rôle of the internal secretions in the pathology of epilepsy, I have recently had skiagraphed a number of my epileptics with very interesting results in regard to the size and shape of the sella turcica. In several of the skiagraphs the sella turcica was shown to be greatly enlarged, leaving no doubt as to an increase in the size of the pituitary body; others again revealed marked variations in size and conformation which appeared to be in excess of the variations found in These observations, normal individuals. necessarily incomplete, suggesting, however. very strongly disease of the pituitary in epilepsy, would justify the trial of pituitrin. Certainly in so distressing and unpromising an affection as epilepsy every clue should be followed.

I am entirely in accord with Dr. Mitchell as to the importance of determining the presence of an aura. Often too little stress is laid upon this fact, and yet it is a matter of long experience that a knowledge of the aura frequently enables us to abort the attacks by various expedients; of some of which Dr. Mitchell has spoken. I myself regard the aura as a sensory discharge which begins not in the periphery to which the sensation happens to be referred, but in a discharge which begins in a sensory area of the cortex; from such a sensory area the discharge travels either directly or by association fibers to a motor area, and arriving there a motor discharge, a convulsion, takes The question arises how does a sudden constriction of a limb, in which an

aura is experienced, prevent the epileptic seizure? It is very probable that the constriction arrests nothing passing up the limb, but that instead it causes an impression to be sent to the brain into the corresponding sensory area of the limb, and for the time being arrests or changes the molecular movements which have started there and which would otherwise eventuate in a fully developed epileptic discharge. It is a not uncommon experience that a patient in whom an attack begins with an aura in a hand or finger can sometimes stop the attack by striking his hand or finger sharply against some solid object, such as a chair, table, or wall. No constriction is practiced in such a case, and clearly a theory of a substituted sensory change is most in keeping with the facts.

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Not only will the recognition of the aura permit of the use of various mechanical or physiological expedients, but it will also give us the opportunity of using amyl nitrite, a remedy first employed by Dr. Mitchell, which I fear we do not use as frequently to-day as we used to, and which is certainly often efficacious in enabling us to abort attacks.

In regard to the arrest or abortion of attacks, especially by mechanical procedures, my experience has led me to the conclusion that this can be accomplished for a time only, and that the impulse or tendency to the convulsion sooner or later becomes so great that after a while all artificial barriers are broken down and the convulsion takes It would also seem that attacks checked by mechanical means or even by nitrite of amyl become cumulative—that is, when attacks finally occur, they are more severe and may occur in groups. Whether actual status epilepticus can be provoked under such conditions I do not know, but I would not deem it impossible. Again, as is well known, a patient in whom convulsions have for a long time been suppressed sometimes suffers from vague and often very distressing sensations—e.g., depression, exhaustion, pressure sensations about the head, fear, aching in the trunk, limbs or abdomen. Occasionally the patient himself attributes these sensations to the fact of not having had a seizure. I remember one of my patients, in whom I was successful in suppressing the attacks for a long time by small doses of chloretone, telling me that she would much rather not take the remedy and have an attack than continue feeling so badly as she did. In certain cases an attack seems to be followed by an actual feeling of relief.

Together with Dr. Mitchell, I do not regard the symptoms which precede an attack sometimes for many hours as classifiable with the auræ. An aura is essentially and intrinsically a part of the epileptic attack. It is merely the sensory portion of the general cortical discharge. The preliminary symptoms of headache, depression, or other vague disagreeable sensations sometimes experienced by epileptics for several hours or a day before a seizure are possibly to be referred to an increased degree of toxicity. and are in their way analogous to the symptoms which sometimes precede an attack of migraine or in other patients an outburst of hysteria. They should suggest to us the use of a saline purge, perhaps a diminution of the food, or a more active administration of the bromide.

The toxicity of epilepsy has more than once suggested a serum method of treatment, but the failure of Ceni's attempt in this direction is so recent that it needs only to be mentioned. Attempts at the actual cure of epilepsy have thus far failed, and perhaps this is no reproach to our profession. We have to deal, it must be remembered, with an organism for the most part badly put together and intrinsically defective.

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#### THE SURGICAL TREATMENT OF EPILEPSY.

BY WILLIAM J. TAYLOR, M.D., Attending Surgeon to the Orthopedic Hospital and Infirmary for Nervous Diseases, and to St. Agnes Hospital: Consulting Surgeon to the West Philadelphia Hospital for Women, and to the Woman's Hospital.

It is now nearly twenty-five years since I began assisting Dr. Keen in his cerebral surgery, and during these many years I have had the opportunity of seeing a vast number of cases of epilepsy and of operating myself upon a great many patients.

Epilepsies of every variety were brought to Dr. Keen, and for a time we hit almost every head that came in our way.

At first, and indeed at all times, the purely surgical results, the carpenter work if I may use such a term, were brilliant, so brilliant in fact that we became most enthusiastic and believed that in surgery the long-looked-for treatment of epilepsy had been found. As our experience ripened and sufficient time elapsed for us to see the real neurological results, our enthusiasm waned. our disappointments were many, and finally we were compelled to modify our opinions and confine this method of treatment to a very limited number of carefully selected cases.

The needs for operation in traumatic epilepsy are now well recognied by all surgeons and neurologists, and this is particularly so where there has been distinct injury to the skull producing a scar or depression of bone over the motor area, and when the seizures are focal in character.

It is quite generally believed also that in cases of injury producing persistent headache, as well as in certain mental disturbances, an operation, even if only exploratory in character, is justifiable and at times imperative.

In the essential epilepsy of idiopathic or non-traumatic type, when the attacks are general and without local onset, no operation whatever should be undertaken. No permanent benefit can be expected, and it may and frequently does produce much harm.

Almost anything which is done to these patients may for a short time seem to modify the character and frequency of their attacks. Simple etherization, a fall, or even hitting them on the head with a club may apparently be beneficial.

Idiopathic epilepsy with focal symptoms, however, if seen early should always be. operated upon, the dura incised, and the surface of the brain examined carefully for evidence of cyst, new growth, or localized meningeal inflammation.

When a focal epilepsy due to gross brain disease develops, all surgeons are united in advising operation.

The earlier the operation the better the results, for after two years the associated fibers are almost certain to have undergone degeneration and little can then be promised.

The dura must be opened and the surface of the brain examined by sight and touch. If there be a fracture of the inner table of the skull or an overgrowth of bone, an organized blood-cot, a tumor, a cyst, or other evidences of pathological changes such as adhesions between the bone or dura and the surface of the brain, efforts must be made to remove the source of irritation.

I do not think we are now justified in excising the center from the convolution of the brain with any expectation of benefiting the patient, unless there be distinct evidence of disease.

If there be history of trauma followed by epilepsy which has a focal origin, even if the center from which the impulse arises is not beneath the scar, the surgeon should explore at the seat of the injury first and later over the discharging center.

When the injury has been over the motor area the results from operative interference promise much more than when the injury is over the sensory region.

While the value of operations for epilepsy has been greatly exaggerated, and the results in the vast majority of cases disappointing, it does not follow that surgical intervention should be abandoned, but rather should be confined to carefully selected cases after the most thorough study by both neurologist and surgeon. Occasionally great benefit may result and unexpected pathological conditions be found which admit of removal.

A wide opening should always be made in the skull, generally by an osteoplastic flap, to enable the surface of the brain to be examined.

Dr. J. Chalmers Da Costa (Medicine, February, 1904) in an admirable article on the "Surgical Treatment of Epilepsy" gives a classification of this disease which is of the greatest value, and one which I have studied with much profit.

#### THE MEDICAL TREATMENT OF EPILEPSY.

BY WILLIAM T. SHANAHAN, M.D., Superintendent of the Craig Colony for Epileptics, Sonyes, N. Y.

In presenting this paper on the medical treatment of epilepsy, I can but endeavor to review concisely what has been done in the past in the therapeutics of this condition and summarize what, to me, seems to be the best general method of treatment now known. Naturally, many drugs and methods have had their day and then passed into deserved oblivion. Others, although long known to the profession, have not always received the proper recognition which their importance should have gained for them. In a paper of this length many of these things must necessarily be referred to

in the briefest manner. The surgical treatment of the disorder will, I believe, be discussed by other speakers of the evening.

No theory ever put forward to explain the origin of epilepsy has been proved in such a way that an exact scientific treatment could be pursued. Thus empiricism continues naturally to play a major part in the therapeutics of the condition.

If we accept the hypothesis that epilepsy is due to the absence of a protoplasmic factor that determines complete nervous development, we are in a position where, if we expect to arrest or cure, we must either supply this missing factor or so modify the relation between the factors present as to have the functions of the organism as nearly normal as possible. The former is impossible, at least with our present knowledge; the latter seems attainable to a certain degree.

To assign bacterial infection as the exciting cause of the symptoms of epilepsy, as did Bra, seems not worth giving even consideration to. Much more credible evidence exists that an abnormal or perverted metabolic activity is present in the epileptic in consequence of which certain chemical substances, either from the gastrointestinal tract or from one or more of such glands as the pituitary, adrenal, parathyroid, thyroid, pancreas, or similar structure, become active toxic agents, as a result of whose influence on the central nervous system the phenomena of epilepsy appear.

Research has thus far failed to firmly establish a logical chain of facts explaining beyond question this supposed perversion of function in its relation to epilepsy. If time permits the unveiling of accurate knowledge covering these matters, we can look forward to our having at some future period a specific treatment for what we now designate as idiopathic epilepsy, or more properly speaking, epilepsies.

Although the underlying factors, such as developmental defects or changes consequent upon early meningitis or encephalitis, whether due to injury at birth or subsequently, may be permanent, the actual exciting cause of the seizures may be elimi-

nated by either preventing its formation or by rendering negative its pernicious influence.

In comparing the results obtained from treatment in institutions and that outside, we must remember that the majority of the former cases are ordinarily of several years' duration before admission, whereas many of the latter are observed shortly after the onset of the condition, and, other things being equal, are of a more favorable type for treatment.

Camp¹ states that a cure of epilepsy may be reasonably expected "when the primary cause is known and removable." How true this is. We must confess, however, that in the great majority of cases it is impossible to accurately ascertain this primary cause.

It has long been remarked that in the treatment of epilepsy all remedies do good for a time, this being due in part to the psychic influence on the patient. It is a common experience to observe, after a period of freedom from the disease that varies from weeks to months, and while treatment is being faithfully employed, to have the symptoms recur.

Epilepsy is such a broadly inclusive term that it involves conditions which differ markedly so far as their response to treatment is concerned. Where the symptoms are due to focal organic disease, overindulgence in alcohol, arteriosclerosis, etc., it is logical to assume that early treatment of a proper nature may reasonably be expected to bring forth better results than where the patient has a generally defective make-up, a paralysis of long standing, or some other chronic condition.

We all know that frequently the symptoms of epilepsy have continued unrecognized for many years, thus permitting the convulsive habit to be firmly established. Idiopathic epilepsy, appearing as it does in 85 per cent of all cases, before the twentieth year, shows itself as a disorder of the developmental period. This is another reason why permanent degenerative changes in the nervous system are the rule and not the exception.

In outlining a course of treatment for

an epileptic, the physician must impress upon him and his family that inasmuch as epilepsy is a chronic disorder, the special treatment must continue over a long period, and that in fact the patient must, during the balance of his days, live according to certain closely drawn rules relating to hygiene and diet. Unless earnest coöperation is secured for the carrying out of these details, one cannot expect to obtain the desired results.

The physician himself must not relax his vigilance in the following up of his epileptic patients. Perseverance is indeed a virtue in the treatment of this condition.

The readjusting of the patient's mode of life is ofttimes a difficult process and, of course, in many cases cannot be as complete as one would wish for. The essential changes indicated in the individual case must, however, be insisted upon or it is useless to attempt to treat the patient.

When the occupation, means of recreation, the bathing, diet, and hours of sleep have been properly regulated, a long stride has been made toward assisting the individual in acquiring a more stable functioning of his central nervous system. The initial effort required to bring about coöperation must be well tinged with psychic influence, without which our means of treatment of nervous disorders would be small indeed.

The psychical influence in the treatment of epilepsy is of considerable importance, as a belief aroused on the part of the patient that he is to be helped will pave the way for a serious effort being made to carry out whatever treatment may be prescribed.

Hope and confidence must be aroused in your patients before you can expect to secure beneficial results from your treatment.

Prophylaxis in general must consist in continued efforts being made toward arousing a public sentiment which will demand the segregation at least of the epileptic who is mentally defective. We can never hope to have isolated the small percentage of epileptics whose mentality has not deteriorated. Before, however, anything can be

accomplished in this general direction, physicians as a whole must be made to realize the results of the mating of defectives. The average practitioner does not appear to grasp the seriousness of this problem; such being true, how can we expect the general public to understand these matters as they should?

Relative to prophylaxis as applied to the individual. I cannot reiterate too much the plea that all convulsions in infancy and childhood be recognized as very serious occurrences, so much so that such a child requires careful supervision ever after. Parents and those who have to do with the raising of children must be brought to appreciate the great importance of giving proper attention to the diet and hygiene of a child in whom even one convulsion has occurred. Such care would, in many instances, result in these children developing into strong, healthy adults with no evidence of an unstable nervous system. Lack of such attention too often means recurrence of convulsions, and in consequence a progressive deterioration of the unfortunate individual.

With the exception of the sedative effect obtained by the discovery of the effect of the bromides, we may say the general principles of treatment of epilepsy were recognized thousands of years ago. The importance of exercise, bathing, and the careful regulation of the diet was recognized by the earliest writers on the subject—in fact, so carefully were these methods laid down that we cannot at this day materially improve upon them.

We must confess that the medicinal treatment of epilepsy is essentially ameliorative and, comparatively speaking, of minor importance when one considers the value of strict dietetic and hygienic measures.

It is a matter of common observation that the natural tendency of epilepsy is to progress, rarely to cease spontaneously, after it is well established.

It has been well said that the subject of epilepsy is one that embraces, perhaps more than any other limited department of medicine, the whole range of therapeutics.

Sieveking,<sup>2</sup> a writer of sixty years ago, stated: "In epilepsy the results have been, if not barren, yet unsatisfactory; and still the disorder constantly attracts new inquirers, each anxious that he may succeed in lifting the veil that shrouds the mystery. We are justified in expecting more decided benefit from a full development of our hygienic resources in combating epilepsy than by reiterated experiments with drugs. Epilepsy is a disease of the whole man and not of any one organ or system of organs alone. In many instances there is no doubt that the result of treatment is merely a temporary arrest or postponement of the affection, which is erroneously regarded as a cure."

Sieveking also tells us that "there is not a substance in the materia medica, there is scarcely a substance in the world, capable of passing through the gullet of man, that has not at one time or other enjoyed the reputation of being antiepileptic."

I must agree with Dr. A. J. Rosanoff,<sup>3</sup> who, after making dietary tests, concluded that the epileptic should receive the largest amount of carbohydrates and fats that he can properly assimilate and the smallest amount of proteids compatible with the preservation of the nitrogenous equilibrium—that is to say, the amount of nitrogen ingested must not be allowed to fall below the amount excreted.

I scarcely need to refer further to the details of arranging a diet for the individual case. What one epileptic may use with impunity may be very harmful to another. The purin-free diet advocated by Turner and others has some value perhaps, but I cannot see that the results following its use differ from the ordinary restricted diet. It is easier to restrict the diet and to regulate the action of the bowels than to treat by intestinal antiseptics, although the latter may have some place.

The history of the use of the bromides from Sir Charles Lacock's advocacy of them in 1857 for use in epilepsy up to the present is so well known that I will not review it at this time.

The bromides' only use is to diminish

the frequency and severity of seizures. The removal of the instability of the brain, if such is possible, must be accomplished by other methods. I would repeat that a careful regulation of the method of living is more essential in the treatment of epilepsy than is medicine. The bromides in epilepsy might be compared to a muffler or governor to control temporarily.

How frequently has the following observation of Peterson<sup>4</sup> been overlooked: "In order to give scientific value to any new therapeutic measure in epilepsy, it is necessary to show that the patient has not been using bromides for a long time before the experiment in the new treatment has been undertaken."

Sterile solutions of the bromides have been used hypodermically in status epilepticus, but to me this has always appeared to be the heroic use of a measure whose effect does not warrant such a procedure, as the control of the seizures, when such is possible, can be gained by other methods.

It has been aptly said that the use of bromides results in a chemical restraint of nerve cells. It has also been asserted that if the bromide is continued over a long period, chromatolysis of cortical cells and even dissolution may occur.

Delirium as a result of the overuse of the bromides is a symptom which, when it occurs, may not be ascribed to its proper source.

I will but mention hypochlorization, as Toulouse's method of administering the bromides is too well established to need my commendation.

For those having seizures shortly after arising, it would be well to give a sedative immediately upon awakening, having the patient take a light breakfast in bed and remain lying down for from one-half to one hour. After this period the readjustment of the cerebral conditions from their state during sleep to that during waking hours has occurred, and the patient may arise.

Where seizures occur during the first few hours of the sleep state, the sedative should be given two or three hours before retiring and following a light supper.

In many cases seizures should be under-

stood as occurring not necessarily at night but during sleep, whether day or night.

Bromine may be administered as one of its salts or a combination of the same, being well diluted. The numerous vehicles prescribed disguise the taste of the salt in varying degrees. More elegant preparations of bromine are bromipin, bromoglidine, brometone, sabromin, brovalol, etc. In my experience sodium bromide is the most satisfactory salt to prescribe.

Vance<sup>5</sup> divided cases into two groups as to ophthalmoscopic findings: (1) One with vascular fulness, (2) the other with anemia of the retinal vessels; each finding showing, according to him, the state of circulation in the brain—i.e., directly opposite conditions may give rise to the same symptoms. He claimed that bromides proved very efficacious where retinal congestion appeared and that bromides aggravated cases showing retinal anemia. In anemic retinal cases following several paroxysms, the retinal veins became dilated and tortuous; the arteries, however, remained unusually small.

The treatment of the epileptiform seizures, due apparently to arteriosclerotic changes in the cerebral vessels, consists in proper rearrangement of the habits of the individual, excluding so far as possible everything which would tend to raise the blood-pressure in these vessels. Iodides have a place in the treatment of this type, but of greatest importance is the regulation of exercise, diet, and hours of rest.

In symptomatic epilepsy appearing in adult life, the first convulsion serves, oft-times, as a warning and leads to careful treatment. Are such convulsions indicative of a latent convulsive tendency? The threshold value of stimuli necessary to induce convulsive phenomena must be lower in a part at least of these individuals. A great number of persons who never manifest such symptoms have as marked an arteriosclerosis in comparatively early life, and are also alcoholic or syphilitic or both.

Epileptiform symptoms appearing during the course of some thyroid disturbance resulting in insufficiency of secretion of that gland might be expected to be relieved when thyroid extract was administered in proper dosage. To make a broad claim that thyroid extract should be given to all epileptics is absurd.

When epilepsy appears after twenty years of age, syphilis must always be considered in searching for the exciting cause.

There is no pathognomonic sign peculiar to syphilitic epilepsy except possibly the Wassermann reaction; and even this, strictly speaking, has been obtained in leprosy, etc. Partial convulsions are presumably evidence of the seat of the lesion, being the expression of definite localization and thus prove symptomatic. In some cases, however, it would seem that the centers in which the convulsion seems to originate are affected from distant parts. These symptoms, as just stated, occur after the usual age of onset of idiopathic epilepsy and may result from syphilitic dyscrasia.

When a positive Wassermann reaction has been obtained in such patients, salvarsan should be at once administered, preferably by the intravenous route. Mercurial treatment to supplement this may be found necessary. After a varying period another Wassermann test should be made, and if positive, another dose of salvarsan given.

A relative constipation, or a day late to stool, as it has been expressed, is common to the majority of epileptics. The excretion of waste products is incomplete, in consequence of which, in the epileptic, we have a state which, added to the hypersensitive nervous system, results in the symptoms known to us as epileptic. Drastic catharsis has been decried, but from our experience at Craig Colony it is most valuable.

The moral treatment to inculcate self-control, personal discipline, and strict rules of conduct is of the utmost importance in the therapeutics of nervous disorders, consequently holding true of the epilepsies. Worry and stress act in producing an increase in the number of seizures. The psychical condition so influences sleep, digestion, elimination, etc., that the patient is brought below par, and this manifests itself in these persons by the recurring seizures. It is a well-known fact that psychical disturbances—e.g., worry over examinations, business matters, etc.—may create in sup-

posedly normal individuals an upheaval in the functions of the alimentary tract, circulatory system, etc.

As to the question of the marriage of an epileptic there can to my mind be but one answer—and that an emphatic "No." The type of offspring of such marriages, the desertions which result, the extra burden on the family of the afflicted one, who as time goes on becomes less able to take a place in society, are every-day occurrences and make one ask, How long will these matings continue to be permitted?

When we are consulted by epileptics who hold positions of responsibility where the lives of others are under their control—e.g., railroad employees—we should in justice to society recommend a change of occupation.

Delasiauve in 1849 recommended the establishment of institutions for epileptics where a hygienic as well as a medical plan of treatment might be pursued. He calls attention to the fact that every infraction of temperance will induce a relapse. A peaceable and quiet life is best suited to the epileptic, exercise being very salutary. Galen and Hippocrates laid stress on bodily exercise. The history of the development of the public care of the epileptic is so well known that I will not revert to it at this time

Silvestri,6 comparing the results obtained from animal experimentation with clinical experiences, concludes that a lack of calcium is a prominent factor in the production of convulsions, and that supplying large amounts of calcium may render inactive the substance causing the convulsion.

Some observers report excellent results from the use of calcium lactate; others obtained no beneficial effects. At Craig Colony our experience was the latter one. It has been claimed that the efficacy of milk diet has been due to the increased amount of calcium thus brought into the system.

For the aborting of seizures great results have been claimed to be obtained by inhalations of nitrite of amyl to so modify the cerebral circulation by producing a dilatation of the vessels as to abort seizures. I have seen no beneficial results from other alleged methods of aborting seizures. It is

my opinion that in such instances the seizures were of an incomplete type, and in consequence the apparent effect of the abortive measure was obtained.

The serum treatment advocated by Ceni, Mazzei, etc., has not proved to have the value claimed for it.

Our experience at the Craig Colony with female epileptics leads us to conclude that the alleged relation between the menstrual function and seizures is largely overdrawn. In several hundred cases it was found that there was no apparent connection between the two conditions. In a few cases mild seizures seemed somewhat more frequent at the menstrual periods than during other parts of the month, and in a few the seizures occurred just before or after menstruation.

The fitting of glasses, the correction of dental abnormalities, and other similar corrective measures are of value in that they tend to place the individual in a more normal state of health. It goes without saying that an ophthalmoscopic examination should be made in all cases. I have yet to be convinced that genuine epilepsy can be completely arrested by the correction of refractive errors or the removal of an unerupted tooth.

The importance of hydrotherapy in epilepsy is not always appreciated. In a general way it is useful for its tonic effect. In a particular sense it is of value to bring about a greater activity of the skin and thus indirectly relieving the kidneys from part of their load of elimination.

Enemata given frequently and using large amounts of water are exceedingly useful in cleaning out the torpid lower intestine. The quantities of fecal matter which accumulate in the colon of many epileptics seems remarkable. In serial attacks and status epilepticus the colonic flushing is of the utmost importance. Its earlier use would in many cases have prevented the status.

Owing to the tendency of many epileptics to turn on their face during nocturnal seizures, they should use a small hair pillow, or better, have them accustom themselves to do without a pillow.

The accidents and injuries to which epileptics are exposed as a consequence of their disorder are multitudinous. Some of them will occur despite every precaution.

The school work of the epileptic child should be largely manual in nature. An important feature of all school work is of course the acquirement of method in doing things, or to express it in another way, the training along disciplinary lines. The teacher of the epileptic child requires a larger stock of tact and perseverance than perhaps with any other special class. I have seen many cases in which regular school work seemed to hold in abeyance, perhaps preventing, the mental deterioration so characteristic of epilepsy.

I wish to emphasize the fact that suitable occupation for the epileptic is of prime importance. In this connection it is of interest to refer to the theory presented by Spratling that products from muscular action are capable of uniting with the unknown epileptic toxin and of rendering it inert. This might explain beneficial results obtained from properly regulated out-of-door exercise.

In the treatment of the special conditions such as status epilepticus, serial seizures, mental disturbances, etc., eliminative, sedative and supportive measures, with careful attention to nursing, are indicated.

To summarize: The principles of treatment of the epileptic are good, nourishing diet, sufficient exercise out-of-doors, a proper occupation well balanced by a suitable amount of recreation, sleeping in a well-ventilated room, or better still out-ofdoors, a regular amount of sleep, retiring early, avoidance of undue excitement or cause for worry, a minimum of medication, regular and frequent bathing, careful attention given to the organs of elimination. The confirmed epileptic should, without exception, live in the special institution where he is with his kind, and in consequence can be permitted privileges not available in the outside world. The seizures and mental status must both be considered in making the prognosis. Seizures may be controlled, but a mind which has deteriorated cannot be restored.

There is no more justification for any physician to definitely promise any epileptic

he can be completely cured, to never have a return of seizures, than there would be in telling a patient who had recovered from pneumonia that he would never have another attack of that disease.

Pastor von Bodelschwingh, of Bielefeld, expresses it as his opinion that absolute recovery of the epileptic is rare, and that to consider an epileptic as recovered there must be a perfect restoration of the psychic functions as well as a cessation of seizures.

We have admitted to the Craig Colony for Epileptics during the sixteen years it has been established some 3460 patients. Some have remained for a very short time, others for the entire period; the average number have been with us for from six months to two years. There have been discharged during this same period as recovered 51 cases, and as improved 553, from a total of 2125 discharges. The percentage of recoveries, less than two per cent of the total number under treatment, is observed to be low, but to me no lower than what must be expected with our present knowledge of the epilepsies and the great number with the incubus of hereditary defect of the central nervous system.

I may appear, perhaps, too pessimistic, but so many writers present such glowing reports of cures of epileptics that we who are familiar with the institutional cases cannot but be filled with wonder at the results, and conclude that the class of cases described are of an entirely different nature from those seen in the special institutions. Spontaneous arrests occur infrequently, and are usually in cases which have had no special treatment other than the regular institutional life. In some alleged cases of cure one is justified in questioning the accuracy of diagnosis.

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PERSONAL OBSERVATIONS AND DEDUCTIONS AS TO THE PATHOGENESIS AND SURGICAL TREATMENT OF EPILEPSY, BASED UPON A SERIES OF SIXTY-THREE CASES.

BY CHARLES H. FRAZIER, M.D., PHILADELPHIA, Surgeon to the University and Episcopal Hospitals.

To present a paper on the surgical treatment of epilepsy to a scientific body requires a word of apology, at least for the antiquity of the theme. I should hesitate to mention the date when surgeons first busied themselves with the problem, but it was a long while ago. And yet despite the many years of observation, the present status of surgical therapy in epilepsy is not altogether satisfactory, be it the fault of the surgeon, the neurologist, or the disease. So far as I know there is not to be found in surgical problems any quite analogous to that of epilepsy. Surgery is more or less of an exact science; pathology also is more or less of an exact science; when an organ is the seat of a lesion the pathological nature of which is thoroughly understood, and where the initial surgical experience would seem to indicate that that lesion may be favorably influenced by surgical therapy. we have a combination of facts which form a tentative basis upon which to formulate what appears to be a rational mode of treatment, and it is not long before the surgical profession proves the validity or the unreliability of earlier claims, and the operative treatment becomes a conventional mode of procedure subject to subsequent revisions or modifications or is altogether discarded.

The history of the surgical treatment of gastric and duodenal ulcer, of lesions of the biliary passages, as of many other lesions of the digestive tract, may be cited as an instance of the surgeon's invasion into a new field and of his gradual mastery of the problem by a steady but progressive movement in each step of which distinct advances are made. And one could cite innumerable instances of the extraordinary conquests in the surgery of the past two decades. But with epilepsy we must acknowledge at the outset a very checkered career. There have been waves of

thusiasm, followed by intervals of indifference, and at no time an entire unanimity of opinion as to the proper course of procedure. Were it not for the fact that we are dealing in most instances with an otherwise hopeless disease, and that at least in a small percentage of cases the patients have been altogether or partially relieved, surgeons would have abandoned the field long ago.

In the preparation of this paper at the outset I was somewhat skeptical as to the value of surgical treatment, and was agreeably surprised to find upon investigating my records that of 25 cases operated upon more than three years ago the results in 7, or 28 per cent, were more than satisfactory. Two of these were markedly improved, and five are virtual recoveries. These cases will be referred to more at length further on.

To what should we attribute the rather chaotic situation as it exists to-day and the repeated failures to discover some mode of procedure which will receive universal recognition? To my way of thinking it is due very largely to our lack of precise knowledge of the nature of the disease with which we are dealing, and to the fact that the treatment whatever it may be has been worked out rather on old-fashioned, empirical lines than from an exact understanding of the true nature of the disease.

We have been told that in cases of so-called essential epilepsy there is no demonstrable lesion of the cortex either macroscopic or microscopic, and that in cases of focal or Jacksonian epilepsy there is frequently a focal lesion, but this is not altogether true-at least there are too many exceptions to warrant so positive a statement, for there are cases of epilepsy focal in character in which the lesion is not focal, but diffuse in type, as well as those in which we fail to find any lesion whatsoever; and again there are cases of general or essential epilepsy in which we find lesions quite similar to those in focal epilepsy (Fig. 1).

Inasmuch as every principle of successful surgical therapy is founded upon an

intimate familiarity with the nature of the underlying lesion, it behooves us as surgeons to avail ourselves of every opportunity to make the closest observations of the tissues exposed at operation. Of 53 operations upon epileptic subjects, which represent my surgical experience, in only 6 is it recorded that the findings were negative, and of the remaining the following conditions were noted: Cysts (8), adhesions (6), pachymeningitis with adhesions, edema or cysts (13), edema alone (11), with cyst (1), thickened dura (2), organized blood-clot (1), cystic degenera-

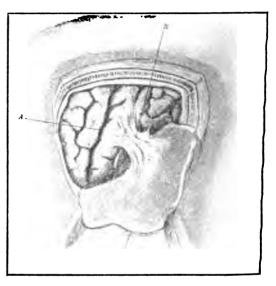


Fig. 1.—Reproduction of a sketch made at operation (File No. 3404), showing area of adhesions in postcentral convolution. This case illustrates a distinctly focal lesion with general convulsions. A, Rolandic fissure; B, focal lesion.

tion (2), cortical gliosis (2). I wish to call attention here to the multiplicity of the lesions with which we have to deal and to the fact that a more or less definite pathological lesion was revealed in so large a percentage of cases.

Furthermore, the multiplicity of the lesions at once suggests the intricacy of the problem with which we are dealing, and the character of the lesions foretells the difficulty of devising means for their relief by surgical intervention. I do not want to dwell too much upon the pathogenesis, and yet it seems to me so vital to an intelligent discussion of the subject that one can ill

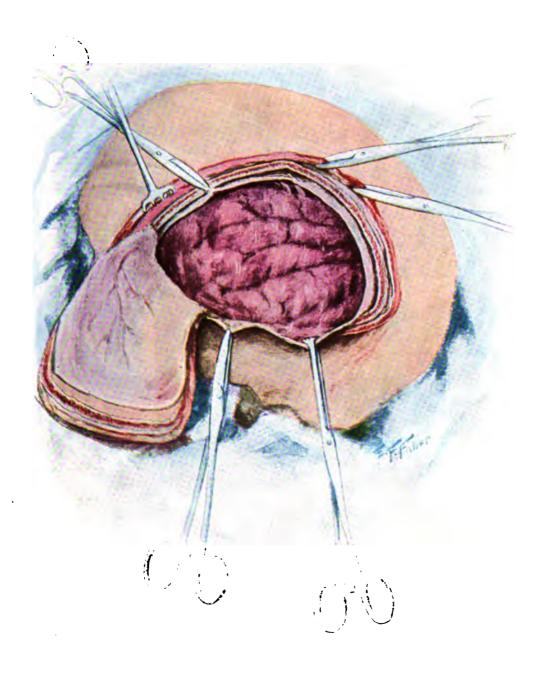


PLATE I.

Water color sketched at operation, showing an intense edema, giving to the surface the characteristic shiny, glistening appearance.

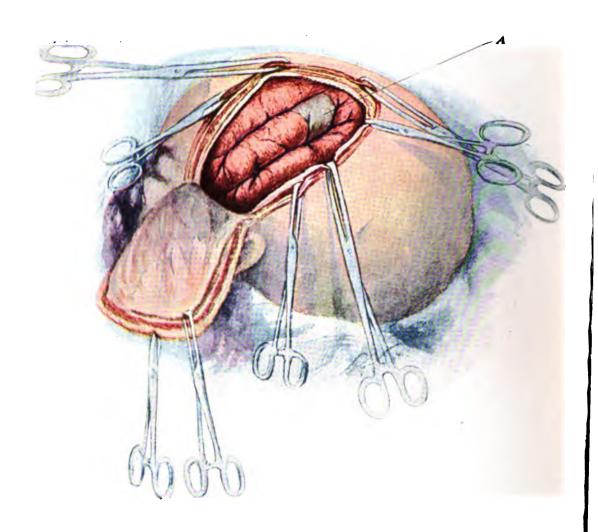


PLATE II.

From a water color reproducing the naked-eye appearances of a field exposed at an operation in a case of Jacksonian epilepsy. Note opaque patch directly over the arm center, location of which was determined by faradization.

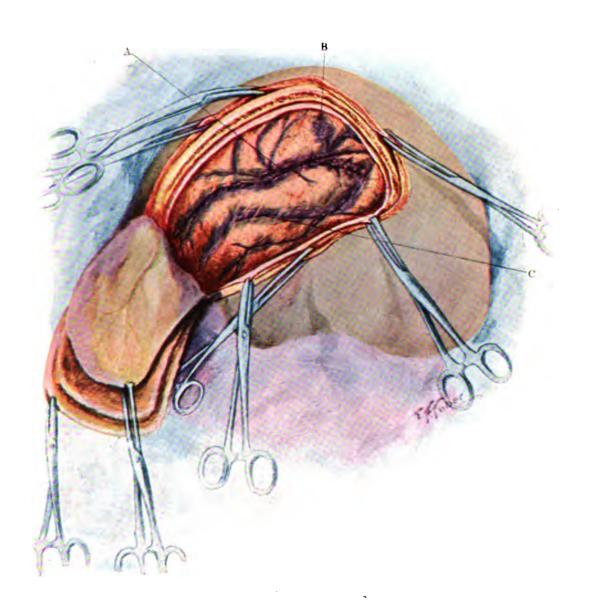


PLATE III.

afford not to give it a very conspicuous place. Of the above enumerated lesions, a considerable number, almost half, were classified as pachymeningitis or edema. (See Plate I.) As to the latter, we find in the subarachnoid spaces an unusual amount of cerebrospinal fluid, sometimes clear and sometimes cloudy like barley water, due to the presence of particles of lymph; upon pricking the pia and arachnoid with the point of the knife an unusual quantity of fluid escapes and may continue to drain for some time after the operation. I acknowledge the possible source of error in determining with precision at the operation whether the amount of fluid in the subarachnoid spaces is beyond the limitations of the normal, since a certain amount of fluid is present in these spaces under normal conditions. But there is no doubt in my mind, and this observation has been confirmed by many others, that in a not inconsiderable number there is a large enough collection of fluid to warrant the condition being regarded as different from what, we are accustomed to see in the cortex of the normal brain. a recent article, Alexander (Lancet, Sept. 30, 1911) lays great emphasis upon edema as an important causative factor in the instability of the cortical cells to which epileptic seizures are ascribed. In 20 successive operations edema of the pia-arachnoid was recorded as present.

In addition to diffuse edema, I have indicated under the term pachymeningitis an opaque appearance of the membranes mostly confined to the course of the vessels in the sulci between the convolutions, but occasionally more diffuse, covering a portion of one or more convolutions. opacity, I take it, is due to the deposition of lymph or to an exudate of traumatic or inflammatory origin, as in not a few instances there has been a history of trauma or of some infectious disease, particularly scarlet fever. Whatever the origin or the nature, this pathological picture is often seen, sometimes alone, sometimes with adhesions, and sometimes with edema. I have made no reference to the microscopic pathology, as there has been no opportunity to make a histological study of the cortex in our clinical experience. Such changes as may be the result of congenital defects or of degenerative and inflammatory processes have been found by those who have made systematic examinations of epileptic brains. (See Plate II.)

Selection of Cases.—Of importance greater than the performance of the operation is the selection of cases. Because of its otherwise hopeless nature and because of the occasional recoveries following operation, the surgeon's advice and opinion are frequently sought, and in my experience the majority of cases present no surgical indications. I have never seen a case of so-called "reflex" epilepsy, but there is sufficient evidence from competent observers to satisfy me that sensitive peripheral lesions may be the determining factor in certain cases, and the propriety of operation under such circumstances should pass unchallenged. Reflex epilepsy as compared with other forms is infrequent. Traumatic epilepsy, on the other hand, is not unusual. In my series of 53 cases, there was a history of cerebral trauma of more or less severity with or without fracture in 27 In almost every instance the patient or the parents will have remembered some incident in which an injury to the head was sustained, but a careful investigation should be made to eliminate those in which the injury or its consequences were comparatively trivial. It should be remembered, however, in this connection that seemingly trivial injuries in young children may be attended with hemorrhage or fractures, the presence of the latter being revealed by the radiograph (Denks and Schwarz, from Weil, Beiträge zur klinische Chirurgie, Bd. lxx, 1911). If there is no external evidence of injury, such as a cicatrix, a depression, or a cranial defect, a careful inquiry should be made as to what transpired immediately after the accident in order to determine whether the clinical condition was serious enough to have been caused by a fracture, concussion, hemorrhage, or contusion (see Fig. 2); whether there was a period of unconsciousness, of delirium, of convulsions, of persistent headache, or of transitory paralysis of one side or the other. We are justified in recommending operation in traumatic epilepsy without external evidence of injury when the seat of the lesion can be sur-



Fig. 2.—A case of traumatic epilepsy with a large cicatrix and depression, the result of a compound fracture.

mised either from the nature of the attacks or from the symptoms attending the original injury. The seat of the lesion is clearly indicated in some cases by the character of the aura, and in others by the Jacksonian nature of the seizures. We are justified, I believe, in recommending operation in traumatic epilepsy in all cases in which there is external evidence of an injury, such as a depression of the cranium, more particularly defects of the cranium, but occasionally only cicatrices, where the history indicated serious cerebral trauma. The results following the removal of traumatic cysts, of fragments of bone, of thickened areas of dura justify the radical policy to which surgeons generally subscribe in their attitude toward traumatic epilepsy.

Much finer discrimination must be exercised, however, in selecting cases from the group commonly known as symptomatic or general. In this group the convulsions may be Jacksonian or general. It is in the former, however, in which I have made it a practice to recommend an exploratory operation. In this group may be included the cases which follow the so-called cerebral palsies of children, in which the lesion

found at operation may be the result of an encephalitis or meningoencephalitis, such as porencephalus, cyst formation, gliosis, circumscribed granular plaques (see Plate III), or the pachymeningitis already alluded to. While in this group the character of the attack clearly indicates the area to be explored, the nature of the lesion is unfortunately not likely to be favorably influenced by any surgical procedure. That any operation could affect the gross extensive structural lesions that one sees in many of these cases is out of the question, so that as a class the epilepsies of cerebral palsies in my experience derive little, if any, benefit.

In the absence of residual paralyses or spasticities, one can determine the seat of the lesion in symptomatic epilepsy by a careful examination after the attacks, which may reveal some slight disturbance either motor or sensory in the extremities or in the distribution of the facial, trigeminal nerves (Krause), or nerves supplying the ocular muscles, or some disturbances of the reflexes. Thus by an examination after an attack or by the character of the aura (see Fig. 3) we may find a guide to the seat of the lesion even where the attacks are



Fig. 3.—Photograph of patient at onset of general epileptic seizure, preceded by an aura of pain in the left leg, which the patient grasped firmly in the hope of averting an attack.

general and not Jacksonian, and under such circumstances I have been in the habit of advising exploration. In another group of cases, while the seizures are general at the time the patient comes under your observation, careful inquiry may reveal the fact

that at the onset the convulsions were distinctly focal.

Briefly, then, I include in the indications for operation cases of traumatic epilepsy with such restrictions as have been indicated cases of Jacksonian epilepsy, and cases of general epilepsy in which there are symptoms indicating a focal lesion. But no matter what the type, the operation must be undertaken with the full realization that the pathological lesion may be of such a character as to defeat any attempt to arrest the disease. It is needless to say in this connection that there is nothing in the manifestation of the disease to indicate the nature or the extent of the lesion. Before the operation this is purely a matter of speculation; the most insignificant lesion may be associated with the gravest form of the disease, and vice versa, serious alterations in the structure of the cortex may give rise to attacks comparatively infrequent and relatively mild.

Operative Procedure.—The character of the operation must vary according to the character of the lesion, on the one hand, and perhaps the variety of epilepsy on the other. First of all as a matter of prophylaxis should we not be a little more painstaking in the examination of patients with cranial and intracranial injuries? within a few days of the injury we can detect signs of hemorrhage, either epidural or subdural, the suspected region should be uncovered and the clot, if found, removed. I recall a case in which following a basal fracture and cerebral contusion I was able to detect slight weakness in the left upper extremity, and upon exploring the motor cortex I found and removed a small clot from over the arm center (see Fig. 4). If this had been allowed to remain, it could readily have become the exciting cause in disturbing the equilibrium of the cortex. In the line of prophylaxis also we should not only insist upon the elevation of fragments but upon the repair of defects following fractures of the cranium, if not immediately, at least as soon as the condition of the wound will allow. In justification of this I may quote from Gobiet (Wiener klin. Woch., 1908, No. 21), who brings up the old question of the relation of cranial defects to epilepsy, and recalls Stieda's report of a series of thirty-three cases in which very favorable results were obtained by closing the defect.

In traumatic epilepsy with marked depression, the contour of the skull should be restored and at the same time the region beneath explored. Where we have large or small defects these should be repaired, preferably by the König-Müller method, transplanting a fragment composed of the outer table of the skull and pericranium to

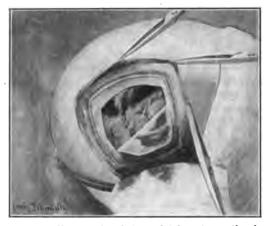


Fig. 4.—From a color photograph taken at operation, in which a thin pial clot was discovered in the region of the arm center.

the defect and securing the same in place with interrupted sutures (see Fig. 5). While I have in the past used celluloid plates, I have abandoned them altogether for the autoplastic method, and have now under observation four cases, none of which have as yet, however, passed the three-year limit. Adhesions are just as big a bugbear in the cranial as they are in the peritoneal cavity. When they form, as they frequently do, between the dura and the pia-arachnoid, either they should be left undisturbed or we should be prepared to sacrifice a portion of the dura involved, especially if it overlies that region of the cortex from which the convulsions are initiated. The mere division of adhesions will be followed inevitably by their reformation, and the interposition of foreign material is impracticable, as the latter acts as a foreign body and source of irritation.

There need be no discussion as to the management of cysts. The latter should be evacuated and as much as possible of the cyst wall removed, but if the cystic formation is merely a part of a porencephalic



Fig. 5.—Photograph of patient with traumatic epilepsy, with large cranial defect.

process or of cystic degeneration, the mere evacuation or removal of the cyst will have little if any influence upon the epileptic attacks (see Fig. 6). The same general principle applies to all focal lesions as applies to cysts. No matter what their nature, whether

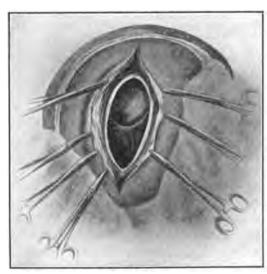


Fig. 6.—From a sketch, made at operation, showing extensive area of cystic degeneration of traumatic origin.

tumors, gumma, organized blood-clots, fragments of bone, thickened dura, or what not, they should be removed. Thus far the problem is comparatively free from difficulties; when, however, we are confronted with cases in which the process is more diffuse, as in the cases of edema or in those in which there is no demonstrable lesion, we must choose one of several methods: (1) a method designed to afford drainage, (2) excision of the cortical center, Horsley's method, and (3) the decompression method of Kocher, the so-called "ventilbildung." Having had no experience with Bircher's method, I will pass it by without comment; suffice it to say that Bircher recently recommended gentle massage of the cerebral cortex and believes his cases were favorably influenced by the operation.

In dealing with cases of edema alone, I have been in the habit of pricking the membranes at various places in order to allow the fluid to drain off and of providing some outlet to the epidural space either by having a portion of the dura unsutured, by removing a portion of the dura (see Fig. 7), or by a method about to be described, which commends itself especially to me, suggested by Krause. After the osteoplastic flap is reflected, an incision is made in the dura one-third to one-half an inch from the margin on three sides of the cranial opening. The dural flap is reflected, and at the four angles of the opening the dura is cut up to the margin of the bone. This enables one to reflect three dural flaps, so that when the osteoplastic flap is replaced a layer of dura is so interposed between the bony surfaces as to prevent their union. If we recognize in edema a pathogenic factor and believe the convulsions will be favorably influenced by drainage, I know of no better way in which drainage can be provided for than by the method as above outlined. In looking over my records, I find that in 23 of 53 operations I have concluded the operation by removing the bone from the temporal region as for a cerebral decompression. Many of these cases are too recent (7) to include in the final report, but of the older cases (16) there is one who in over three years has had but one mild attack, a virtual recovery.

When dealing with cases with focal symptoms, but without focal lesions, we

must adopt one of two methods. Kocher's decompression or Horsley's excision of the cortical center. As for the former, although not convinced of the rationale of the operation. I have practiced it a number of times especially within the last three years, because it has been recommended by so eminent an authority as Kocher, and received the indorsement and the favorable results reported by Friedrich, Kümmel. Krause, and Kocher himself. Kocher proposed decompression on the theory that epileptic seizures are provoked by a condition of intracranial hypertension. idea has been confirmed by observations of Hause and Hitzig, and of Stadelman, while,

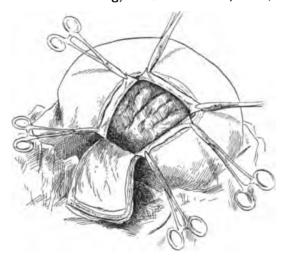


Fig. 7.—Schematic representation of method of providing drainage in cases of edema. Note narrow marginal dural flaps reflected over margins of bony opening.

on the other hand, Nawratzki and Arndt look upon increased tension as an effect rather than a cause.

With Horsley's operation, my experience has been limited to one case in which the facial center was excised without any appreciable benefit. This method in its day was enthusiastically received, later was practically abandoned, and more recently has been revived. The failure attending its practice has been attributed to the fact that surgeons determined the area to be excised only by anatomical guides rather than by the exact methods of faradization. My own objection to the operation was based on the theory that the resulting scar would in it-

self be sufficient to excite convulsions and that recurrence would be the rule rather than the exception. If further observations do not sustain this argument, I should be inclined to adopt it in those cases in which no other lesion is found and in which the center can be accurately determined by faradization.

Results.—Extraordinary reports have been issued from time to time as to the effects of surgical intervention, extraordinary chiefly in the great variability in the percentage of recoveries in the hands of different operators. It is difficult to account for this great variation, unless it be that in many instances the reports are issued too soon after the operation. standardize the result, no case should be reported as cured unless at least three years have elapsed since the operation. Of course the three-year limit is purely arbitrary, although quite reasonable, as relapses or recurrence after that time are exceptional. but the well-known effect of operation per se upon epileptic subjects makes it imperative that a reasonably long time should have elapsed before any case should be put on record as influenced by the operation. The effect of operation per se upon epileptic subjects has never been satisfactorily explained, and yet no one who has had the opportunity of observing many cases in the postoperative period could fail to recognize the change of temperament, of general morale, as well as the freedom from attacks. Often have I had patients tell me in the convalescent period that they had not felt so well for five or ten years. We cannot attribute the transformation altogether to the relief from attacks, for in many cases the attacks may have been comparatively infrequent. Can it be due to any modification of the metabolic processes or to any influence upon glandular secretions, to change of environment, of habit, or of diet, to any factors which may influence the nutritive processes of the body in general and the brain in particular? We can only conjecture as to this, but the question has arisen in my mind as to whether the effect of operation per se may in some cases be more than transitory in effect and account for a certain number of those cases which have been reported as cured irrespective of what particular technique may have been carried out. In view of the doubtful efficacy of some of the operative procedures which have been practiced, I cannot help but feel that there is some foundation for this hypothesis.

Turning now to my own records, out of 25 cases which have passed the three-year limit and could be traced, seven, or 28 per cent, have been profoundly influenced by the operation. Of these seven, one (File No. 982) was a case of Jacksonian epilepsy of five months' duration, in which a subcortical cyst was found at the operation and the cyst wall removed. He recovered considerable strength in the arm and leg, which were partially paralyzed, the headaches of which he complained were entirely relieved, and his attacks were reduced in frequency to one every two months and are much less severe than they were before.

In the second case (File No. 1102) the pathological lesions were a pachymeningitis, edema, and increased tension. The operation was performed six years ago; the attacks, of one year's duration, at first were of the Jacksonian type and afterward became general; there have been no attacks for the past three years; the patient, now a young man of nineteen years, is of sound physique, able to work, and his mind is much clearer than it had been.

The third patient (File No. 1249) was a young man of twenty; since the operation, in 1906, the attacks have become progressively less severe and less frequent; he has been entirely free from attacks for the past nine months. A diffuse pachymeningitis and cortical cyst were uncovered at the operation. The patient's disposition has improved, he is able to work, and in every other respect he is perfectly well.

The fourth patient (File No. 2482) within a year of the operation in 1907 had sustained a serious cerebral contusion without focal symptoms, but with loss of consciousness followed by delirium extending over a period of several weeks, and an

organized blood-clot was found in the motor region and removed. At the site of the clot there were firm adhesions between the dura and pia. Four years have elapsed since the operation, and in this time there have been no attacks for the past 31/2 This case emphasizes the importance of operating upon all cases of cranial trauma in which there is any reason to believe there has been a cortical hemorrhage. Had we been able to detect any focal symptoms at the time of the injury we would have urged operation without further delay, but despite frequent and careful examination no evidence of cortical hemorrhage was apparent.

In the fifth of the series (File No. 2683) nothing was found at the operation but an intense edema; although the patient had sustained a fracture of the skull there was no evidence of any injury to the internal table or to the underlying meninges and cortex. Before the operation he was having two or three attacks a week, all general in character, but he has had none since.

In the sixth case (File No. 3404) the patient was twenty-three years old at the time of the operation, three years and nine months ago. She had had concussion of the brain at eleven, her first convulsion at fifteen; the attacks were general in character. An area of adhesions two centimeters in diameter was found a little behind the post-central convolution. Although almost four years have elapsed, the patient has had but one attack, of which she had no intimation, as it was not severe and occurred at night.

In the seventh case (File No. 3626) the patient, a young man of twenty, had sustained a fracture of the skull at the age of six. The operation, performed almost four years ago, revealed an intense edema and a pachymeningitis, and since that time he has had no convulsive seizures. He has been in splendid health and able to attend his work regularly during the four years intervening.

Briefly, then, of 25 cases operated upon more than three years ago, seven have been profoundly influenced:

Q١	тм		

	Date of ope- ration.	Character of attacks.	Duration of disease.	Findings.	Operation.	Result.
Case 1	1905	Jacksonian.	5 months.	Subcortical cyst.	Evacuation of cyst.	Attacks less frequent and less severe—once in two months.
Case 2	1905	General.	1 year.	Pachymeningitis and edema.	Craniotomy.	No attack in three years.
Case 8	1906	Jacksonian.	6 years.	Pachymeningitis and cyst.	Evacuation of cyst.	Gradual subsidence of attacks; none for past nine months.
Case 4	1907	General.	6 months.	Organized blood clot.	Clot removed.	Only one since operation; none for past 8% years.
Case 5	1907	General.	?	Edema.	Craniotomy.	Has had no attacks since operation.
Case 6	1908	General.	8 years.	Adhesions and pachymeningitis.	Craniotomy and decompression.	Only one mild attack in four years.
Case 7	1908	General.	14 years.	Edema and pachymeningitis.	Craniotomy and decompression.	Has had no convulsions nor seizures since operation.

These results are by no means brilliant; but they are sufficiently gratifying to stimulate further investigations and renewed efforts. In his report to the German Surgical Congress in 1910, Tillmann presented a series of 29 recoveries beyond the threeyear limit. In Krause's personal experience (Allgemeine Wiener medizinische Zeitung, 1910, iv) with 50 cases there were five completely cured or greatly improved. These figures correspond quite closely with my own as to the total number of cases and the number of cases benefited by operation. The value or the justification of the operation should not be measured by the percentage of absolute cures alone. To reduce the attacks in severity and in frequency from one in several days or weeks to one in several months or years, or even to be able to arrest the progress of the disease, is a matter of no small consequence and should not be lost sight of in the final analysis.

It has not been my purpose to advance the claims of surgery as a means of controlling a very distressing disease, but merely to present such observations as I have been able to make at the operatingtable in the hope that they may throw some side-light upon a problem as peripatetic as it is perplexing.

#### SUMMARY.

1. The development of the surgical treatment of epilepsy has met with many impediments, among which should be mentioned:
(a) The uncertainty as to the origin of the

attacks; (b) the multiplicity of the pathological lesions; (c) the positive findings in some cases and negative findings in others.

- 2. In a larger percentage of cases than has been hitherto appreciated, some pathologic lesion of the exposed cortex has been found.
- 3. Operative intervention should be regarded as justifiable: (a) In traumatic epilepsy with external evidence of an injury; (b) in traumatic epilepsy without external evidence of an injury when the nature of the attacks or the symptoms immediately following the injury indicate the seat of the lesion; (c) in all forms of Jacksonian epilepsy of whatever origin; (d) in general epilepsy where the suggestion of a focal lesion may be found by a careful physical examination before or after the attacks in some disturbance of motion, sensation, or reflexes.
- 4. The operative procedure must be adapted to the character of the lesion: (a) Cranial defects should be repaired; (b) focal lesions, such as cysts, tumors, etc., should be removed; (c) edema, a very common lesion, calls for some method of drainage; (d) in Jacksonian cases without lesion the cortical center should be excised; (e) in idiopathic epilepsy without focal symptoms or lesions Kocher's decompression deserves consideration.
- 5. The value of the operation may be measured in terms of improvement or cure. Either should be considered as justifying the operation.

6. Gratifying results may be anticipated in at least 10 to 25 per cent of cases.  STATISTICAL SUMMARY.  1. Number of Cases	7. Character of Attacks.  General
5. Ages According to Decades.	Duration unknown 4
0-10       7         10-20       16         20-30       18         30-40       10         40-50       2         6. Etiology.         Fracture       9         Cranial trauma       18         Intracranial hemorrhage (new-born)       4         Epidural hemorrhage       1         Cerebral hemorrhage       1         Tumor       1         Chronic meningitis       1         Infectious fevers       8         Undetermined       10	9. Findings at Operation.  Cyst

#### CHLORETONE AS A PREVENTIVE OF POSTANESTHETIC VOMITING.

BY LEONARD W. BICKLE, F.R.C.S. EDIN., Late Hon. Surgeon, Adelaide Hospital, Adelaide, South Australia.

In the November, 1911, issue, page 836, F. J. Bowles of New York suggests the use of chloretone for the above purpose.

I would like to refer to my article and experiences with the drug published by you in October, 1902. I first began the use of it in 1900, and am to-day far more convinced than I was then that chloretone is the best drug to give before operating. I never operate under a general anesthetic if possible without the previous administration of this drug. The dosage is important. I have heard of failures, but inquiry has generally shown that an insufficient dose has been given. I invariably administer fifteen grains in a capsule one and a half hours before the time fixed for the operation. In one case in which a colleague tried it and it proved a failure, I found five grains were given over night and five in the morning.

Another gave 71/2 grains and had failures. An experience of my own is useful.

A very hysterical female patient was advised to have an examination under an anesthetic. Fifteen grains in three capsules of 5 grains each were ordered to be taken an hour and a half beforehand. She was intensely sick. It was found the chemist had misread the prescription, and only one capsule had been taken. An abdominal section was advised as the result of the examination. To avoid a similar mistake the fifteen grains were ordered in a single wafer. The appendix, with two foreign bodies in it, was removed, also the left ovary with a cyst the size of a mandarin orange; the right ovary was resected, and several small cysts were cut out. Not a vestige of sickness followed. There was so little shock that on the morning of the

third day I found her doing fancy needle-work.

A young girl of nineteen, very small and delicate, had a rapidly growing soft fibroid of the uterus. This was removed by the abdominal method at 9 A.M. Chloretone was given. In the evening there was no evidence of shock; she conversed freely; she had not been sick in the least and had taken nourishment freely. The stitches were removed on the eighth to tenth days. On the fourteenth day she left the Private Hospital, and traveled to her home by rail (105 miles) on the sixteenth day. A few months later she came back to report, looking well, and had gained a stone in weight.

A strong man, alcoholic, had epithelioma of the lip. This was removed under chloroform, prior to my beginning the use of chloretone. He was excessively sick. Five years later he had glandular return. This time I gave him chloretone. He was not sick at all. A subsequent operation three years later was required; no sickness followed—chloretone was given.

I could multiply the foregoing by any number almost, but I think these examples are sufficient to show the value of the drug when given in adequate dosage to prevent sickness and minimize shock. For dental cases and adenoids and tonsillotomy cases I never give it, as a little vomiting is useful in getting rid of swallowed blood. Chloretone has many advantages:

- 1. It lessens the patient's dread of the table.
  - 2. The anesthetic is taken more quietly.
  - 3. Very much less anesthetic is required.
- 4. The patient is very quiet in coming to. There is no tossing and twisting about, and the quiet and absence of vomiting give physiological rest, and thus healing by first intention is facilitated, ligatures are less likely to slip, and bandages are not disturbed.
- 5. It minimizes shock in a remarkable way.
- 6. Nourishment can be freely taken as soon as the patient becomes fully conscious.
  - 7. In operating in private houses less

nursing assistance is required, and the nurse can straighten up, rough wash and wipe instruments whilst the patient is calmly resting. She does not have to sit by with bowl and porringer to prevent soiling of bedclothes by sickness.

Sometimes the drug causes a little dizziness before the operation. This is the only drawback I have ever found. I have never seen any trouble to the anesthetist. After ether particularly, some mucus may be thrown up, but there is no subsequent vomiting.

#### ANTITYPHOID INOCULATIONS.

The Medical Record of October 14, 1911, calls attention to the fact that the officers and men of the entire army of the United States, 76,000 in all, are being inoculated against typhoid fever-that is, all under forty-five years of age. The Secretary of War has submitted himself to vaccination, setting the example. Heretofore it has been optional for an army officer or private whether he would thus be protected; and on that basis 17,000 were inoculated. But now all must submit, by order of Major-General Leonard Wood. Major Russell of the Army Medical School in Washington has prepared the "typhoid prophylactic," which is being distributed to the various forts, posts, and other military communities throughout the United States and its possessions. In something like a few weeks the whole army is expected to be inoculated, and will certainly, within a fortnight thereafter, be immune to typhoid fever. Very little if any inconvenience has been felt; the vaccination is done precisely as against smallpox, in the left forearm, for all the soldiers. In civil life the left-handed man would be inoculated in the right fore-The experience has been that the soldier loses not a single day's duty, and does not go to bed. He is watched carefully for twenty days and is then declared a typhoid immune. Of course, those who have unmistakably had the disease are not vaccinated. Whatever discomfort there is never lasts beyond forty-eight hours, and it is in general less than that occasioned by vaccinations against smallpox.

Our army is by these measures being rid of typhoid fever, up to recent times a far greater destroyer of soldiers than the enemy's sword and missiles. For example, during the Spanish war two divisions of the Seventh Army Corps encamped at the time in Florida were submitted to an experiment; the one numbered 10,759 men, the other 12,801. The camp conditions as to sanitation were exactly alike for these two divisions, and the water for both was obtained from artesian wells. None of the officers or men in the smaller division had been inoculated with the typhoid vaccine; it had 2693 cases and 248 deaths from this disease. In the larger division a majority were inoculated, and it had but a single case of typhoid fever and no death. Except as just stated, little was done in our Spanish war, so that our troops then developed 20,738 typhoid cases, while above four-fifths of our mortality among officers and men was by reason of this disease. During the Boer war the British had 31,000 cases of typhoid fever. The typhoid fever rate in the German army was cut down onehalf by vaccinating a portion of the troops in Southwestern Africa in the campaigns against the Hereros in 1904 and 1907. In India in 1908, among 12,000 English troops, one-half were vaccinated; the remaining 6000, under like conditions, remained unvaccinated; seven times as many among the latter contracted typhoid, and eleven times as many died of it.

Lieutenant-Colonel J. R. Kean of the Army Medical Corps observed, anent the recent application of this typhoid prophylaxis to our 16,000 troops in Texas, that although this force had been for more than three months exposed to heat, dust, mud, flies, and all the other vicissitudes of camp life, only one case of typhoid fever developed up to June last. "The medical authorities of the army," he said, "are much elated at this great feat of preventive medicine, which they hope will bring into

common use a procedure of as great sanitary importance to the American people as was the discovery of the method of preventing vellow fever."

Since such immunity against typhoid is obtainable in military camps it ought to be, as Colonel Kean suggests in the sentence above quoted, quite as capable of achievement in civil life-especially in large communities. Every urban typhoid epidemic has been succeeded by a secondary epidemic, evolved naturally from it. The secondary phenomena might easily be prevented by prompt inoculation of all those living in and about the affected region. The private practitioner should have at his disposal antityphoid vaccine, quite as he now has this prophylactic means against smallpox; and he should have his patients submit to the use of the former quite as is done now, as a matter of course. in regard to smallpox. If the inoculations are made in the late afternoon it is very likely that any untoward manifestations will have disappeared by the following noon. These inoculations should especially be submitted to by traveling business men who may in the most subtle and inscrutable ways be subjected to this ingestion infection. Typhoid fever is peculiarly a disease of youth and early manhood and womanhood; and it might not be inadvisable for those young men and women who go to college and boarding-school to submit to this preventive measure before leaving home. Tourists, vacationists, may not only themselves contract the disease, but, even of more importance from the communal viewpoint, they may become typhoid carriers, introducing the bacillus into regions hitherto exempt. All such should be inoculated. Physicians themselves, nurses, orderlies, and hospital helpers should all submit as a matter of course. It is considered that the protection is effective for two years, and that the one inoculation will afford much, though not complete, protection for many years more, perhaps through the remainder of the individual's life.

#### EDITORIAL.

#### ANESTHESIA BY VARIOUS METHODS.

There are few subjects which are of more universal interest in medicine than anesthesia produced for the relief of pain arising through surgical methods of cure, and the GAZETTE endeavors to keep its readers posted in regard to all the points of value which appear from time to time in the medical literature of the world concerning this important topic. One of the most recent summaries of our present knowledge appears in the London Lancet of December 30 in the course of a description of the general progress of medical science during 1911.

So-called intratracheal ether insufflation. originally devised by Meltzer and Auer, in order that radical operations upon the thorax might be performed without interference with the vital function of respiration, receives indorsement, and the various modifications of this plan suggested by other investigators, as to the technique, are also referred to. It will be remembered that by this means anesthesia can be maintained with impunity for hours provided that the strength of the ether vapor is adjusted to the requirements of the patient, and provided that sufficient, but not excessive, air-pressure is maintained. Chloroform vapor does not lend itself to this method because of its dangerous properties, and even this method of administering ether may still be considered as largely in the experimental stage. The method consists, it will be remembered, in the introduction into the trachea, at a point near its bifurcation, of a flexible tube, the caliber of which is smaller than the lumen of the trachea, and the driving of a continuous stream of air through this tube, the air returning between it and the tracheal wall. By this means efficient pulmonary air circulation is maintained, the ether vapor passing in through the tube with the air. The charging of the air with ether is carried out by its passage through a vessel containing liquid ether.

As a rule it is wise to see that the air and ether vapor is at a temperature of about 10 degrees above that of the room, and that the air is moistened and filtered before it enters the rubber tube.

Another method suggested by Mr. Davies consists in the introduction of the tube and in the complete plugging of the larynx so that all the respiration takes place through an intake and outflow catheter. Ehrenfried uses scopolamine and morphine hypodermically before this method is attempted, and if a thoracic operation is in progress a pressure of 20 millimeters of mercury will maintain a moderate distention of the lungs even after the chest wall has been opened.

Other investigators have attempted to produce anesthesia by intravascular injections, using hedonal dissolved in physiological salt solution. In other instances, one per cent of hedonal and five per cent of urethane, in 200 Cc. of saline solution, were employed. Jeremisch employed this method in 65 cases, one patient remaining under anesthesia for two hours and fifty-two minutes. He states that relaxation takes place in from five to eight minutes, and that the return of consciousness is rapid or slow, according to the size of the dose given. This method also is to be considered as distinctly in the experimental stage. It seems to us to have little to commend it and much to condemn it.

In regard to the intravenous injection of ether for the production of anesthesia, it is noteworthy that in 23 cases Küttner met one with pulmonary embolism and one with a clotting at the seat of injection, so that he has put the method to one side as perilous. Others consider that it is justifiable only in peculiar cases, and had best be preceded by scopolamine and morphine. Autopsies made on 11 patients, the deaths being due to disease and not to the method, failed to show any damage except occasional thrombosis in the vein. Five per cent of ether is used in salt solution, the salt solution being kept warm by a warming

chamber. Some operators use intermittent transfusion: others continuous transfusion. Kümmel has tried this procedure in 90 cases, the patients being feeble and unfit for other methods. He states that there was no nausea or vomiting, and, furthermore, that accidents are less apt to occur with continuous transfusion than with the intermittent type. Burkhardt has met with no accidents in 250 cases treated in this manner. Kümmel employs two supply vessels joined to one tube by means of a Y-shaped piece of tubing. One vessel contains five per cent ether and normal saline, and the other only normal saline, so that they can be used alternately, if it is so desired. Once anesthesia is noticed, which usually occurs in from five to ten minutes, he runs in pure saline, supplying ether only when it is needed, and states that the amount infused varies with the length of the operation. In one operation, which lasted nearly two and a half hours, the patient received 1700 Cc. of the five-per-cent ether solution. very large bulk of fluid introduced into a vein (it amounts to nearly two quarts) strikes us as possessing distinct elements of danger both as to the lungs and the kidneys if not the heart. Koenig, who had two deaths which he thinks were hastened by this method, urges the view that the bactericidal properties of the blood are lessened by its dilution and suggests the possibility of air embolism. It seems to be pretty well decided that this method is certainly contraindicated in patients suffering from advanced degenerations of the cardiovascular system.

During the past year rectal ether narcosis has been revivified, and we trust will be once more consigned to the limbo of useless and dangerous measures.

The employment of nitrous oxide gas in major operations is increasing in popularity in this country, largely through the advocacy of Crile and others, and numerous records have been made of major operations performed when the patient has been under its influence. One thing seems to be universally acknowledged, namely, that for the successful use of nitrous oxide during major operations it must be administered

by one who has become exceedingly skilful in its employment.

We have from time to time referred to the use of scopolamine and morphine, not only as a preliminary to the use of ordinary anesthesia, but also concerning its employment in parturition, and we note with interest that the London Lancet quotes the editorials which we have published on this matter in the THERAPEUTIC GAZETTE. There can be no doubt, we think, of the advantage of morphine and atropine, or morphine and scopolamine, before ether and chloroform, particularly before ether, because much less ether is necessary. The scopolamine-morphine method in the parturient woman seems to be particularly advantageous in hysterical patients or those who are neurotic, and attention is called to the fact that its only disadvantage is that it is prone to produce asphyxia in the child, which Corbett thinks is due to the morphine, and asserts is best treated by immersing the infant in a hot bath. Corbett also suggests that strychnine be added to the scopolamine and morphine, since it does not lessen the analgesia and prevents the depression of the respiratory center of the mother.

Again, quoting the THERAPEUTIC GA-ZETTE concerning the subject of spinal anesthesia, the Lancet approves of our expression of opinion that this method is to be resorted to only in very isolated and peculiar cases, and McCardie states, as a result of his statistical inquiries amongst British and American surgeons, that the mortality of this method is about one in 826, although Hochmeyer and Koenig record a higher rate of fatality, namely, one in 200. Both of these rates are far in excess of the mortality rate of chloroform and seem to prove clearly that spinal analgesia is by no means a safe procedure. Furthermore, the after-effects are often more annoying and serious.

Concerning postanesthetic complications we are glad to note that attention is once more called to the observations of Pasteur of London, to which we have already called attention in an earlier issue of the GAZETTE, to the effect that most of the so-called cases

of pneumonia following ether and chloroform are not instances of pneumonia but of atelectasis of the lung, and that this complication is particularly prone to occur in operations in the upper abdominal segment. We agree with Pasteur that too frequently the physician and surgeon are satisfied with the diagnosis of pneumonia under these circumstances when atelectasis is the real condition.

A considerable amount of work has also been done concerning the development of glycosuria following etherization. The reducing agent in the urine is dextrose, and there is a definite hyperglycemia, the excess of sugar coming from the liver.

Another interesting paper which is worthy of consideration is one which was published by Bovée, who seems to prove that the Trendelenburg position materially increases and influences the secretion of urine, and who therefore urges that in patients who are sufferers from renal insufficiency or arterial or cardiac lesions this position be, if possible, avoided. So, too, Chandler has pointed out that vomiting after ether is less marked in those patients who have their heads slightly elevated during its administration than in those who are absolutely prone. This, he states, is particularly true of patients who already have cardiac disease.

We have already called attention in these pages to the investigations of Graham as to the influence of ether upon bacteriolysis, agglutination, and phagocytosis. The first two functions seem to be unaffected by ether, but phagocytosis seems to be diminished chiefly by the action of the drug upon the phagocytes and not upon the blood serum.

# THE DEVELOPMENT OF GLYCOSURIA AS THE RESULT OF NERVOUS SHOCK.

From time to time clinicians meet with cases of glycosuria or diabetes which seem to be due to a nervous shock, as, for example, that which results from a railroad accident. More commonly they meet with instances in which the glycosuria appar-

ently develops as a result of more or less prolonged nervous stress, as in women who suffer great bereavement after long weeks of nursing, or in business men who are severely strained by financial disaster. In some instances, too, it develops as the result of severe illness. In all of these cases the glycosuria may be but temporary or become permanent, and finally develop into a true While the symptoms in each diabetes. instance may be the same, it is probable that a certain percentage of these cases have a better prognosis than those which develop glycosuria, or diabetes, as the result of some actual injury, grave disorder of metabolism, or disease of the pancreas, in that rest, and measures commonly associated with it as sedatives and tonics, may result in a readjustment and establishment of normal function.

An interesting research, indicating that glycosuria may arise as the result of nervous stress and strain, has been contributed to the American Journal of Physiology of December 1, 1911, by Cannon, Shohl, and Wright, who have found that when cats are excited for even so short a time as one-half hour by being uncomfortably bound, or by being caged in the presence of a barking dog, they develop glycosuria; whereas pain, cooling, or other supposedly harmful factors fail to produce this result, fright or rage being the essential element. It is also interesting to note that there seems to be a relationship between the functions of the adrenal bodies and the development of the glycosuria under these circumstances, because if the adrenals are carefully removed the glycosuria does not appear even if the source of irritation is maintained three times as long as in other cases, although the manifestations of excitement on the part of the animal may be in each instance identical.

As a matter of collateral interest, although not directly connected with the development of glycosuria as the result of nervous irritation, we may also call attention to a study made by Cannon and Hoskins, recorded in the same journal, in which they point out that there is a great similarity between surgical shock and the

condition of an animal after removal of the adrenal bodies. They suggest that the injury which is responsible for the shock results in so great a discharge of their secretion on the part of the adrenal glands that they are unable, for a time at least, to continue their average function, with the result that blood-pressure falls and other symptoms develop. In any event they seem to have proved that great sensory stimulation causes increased adrenal secretion. The relationship between adrenal function and glycosuria is too complex a problem for us to deal with here, but the two sets of experiments which we have just quoted suggest an interesting line of thought as to the influence of nervous irritation upon adrenal secretion in its relation to glycosuria and surgical shock and as to treatment as well.

# THE FUNCTION OF THE PERIPHERAL VESSELS IN COMPENSATING BLOOD LOSS IN HEMORRHAGE.

One of the most interesting lines of investigation which is open to the laboratory worker is the study of the various methods designed by Nature to save life when it is jeopardized by accident. In many instances organs are not only duplicated, but each organ has such a large factor of safety that it is quite capable of performing not only its own work but much, or all, of the work of its mate. So, too, some organs which ordinarily have little functional activity along certain lines are able, when the demand is made, to take the duty of those which have been destroyed.

We are all familiar with the several provisions which are made by Nature for the control of hemorrhage. By the puckering, or inversion, of a severed artery the opening is diminished in size, and thereby the second measure of protection, namely, the closing of the opening by a clot, is accelerated.

Although the fact that a clot rapidly forms in healthy blood when this fluid escapes from a vessel has been known for hundreds of years, and although an immense amount of study has been devoted to

the changes which take place in the blood by reason of which clotting takes place, we have as vet not reached definite and final conclusions concerning all the factors involved. It is quite true that thirty years ago and more it was recognized that the blood contained a substance known as fibringen, and was supposed to contain a second substance known as fibrinoplastin, both of which were necessarily present if clotting was to occur. The view has also been advanced that the clot was produced as the result of the presence in the blood of a ferment, but recent physiological investigations would seem to prove that this is not the case.

Within the last few months a very valuable contribution has been made to this important matter by no less an investigator than W. H. Howell, who, in The American Journal of Physiology of December 1, 1911, also Therapeutic Gazette, February, 1912, not only describes the experiments which he has made but also considers the researches which have been made during the last few years by other workers in this important field, notably by Morawitz. has been proved that the blood not only contains fibrinogen but a substance now known as "prothrombin," which apparently has its origin in the blood platelets. This substance does not seem to be found in the tissues of animals below the mammal, in whom the prothrombin seems to have its origin solely in the blood platelet. To this tissue extract the name "thromboplastin" has been given. The presence of these agents alone is not sufficient to result in coagulation. Calcium must also be present in normal quantity. In other words, as Howell points out, there are three necessary fibrin factors-fibrinogen, prothrombin, and calcium-and when hemorrhage occurs and the blood escapes from a vessel there is added thromboplastin from the tissues, which aid still further in the coagulation.

It is interesting to note in this connection that Howell attributes the failure to clot on the part of the blood when in the vessels to the presence of a fourth substance called "antithrombin," which is at once neutralized by the thromboplastin which is formed from the blood platelets and the tissues as soon as the blood leaves the vessel.

In the same issue of the same journal Cope reports the results of his studies concerning the importance of the contraction of the peripheral arterioles during the occurrence of hemorrhage. Although it is a well-known fact that free bleeding lowers blood-pressure it is also a fact that the system immediately attempts to overcome this lowering of pressure, resulting from loss of blood, by diminishing the size of the peripheral arterioles, thereby diminishing the vascular capacity and preventing a too free flow of the remaining blood in the capillary networks. Cope proves quite conclusively that this compensatory rise of pressure is chiefly or solely due to this vascular contraction, since a free hemorrhage results in diminished viscosity of the blood and venous pressure is decreased. In other words, this is another illustration of the ability of the body by increased functional activity to compensate for a loss which otherwise might produce death.

## THE TREATMENT OF GONORRHEA IN WOMEN.

Although it is true that gonorrhea in women, in so far as its urethroyulvovaginal course is concerned, even in its acute stage, is often so mild as to excite no particular attention, yielding readily to any cleansing treatment, its ultimate cure is generally recognized as in some cases practically impossible of accomplishment. Cary (American Journal of Surgery, December, 1911) characterizes it as an infection with great variability of virulence, the acute course of which is seldom shortened and often aggravated by curative applications. With this pessimistic dictum concerning therapeutics many of the profession will not agree. That the ducts of regional glands may harbor organisms indefinitely is however universally conceded. The further statement that involvement of the uterus and adnexa is frequently the result of meddlesome treatment of the vulvovaginal infection, and is best treated by rest and time as curative measures, will be generally accepted as correct. The author states that if gonococcic infection be limited to the tube it dies in its own toxins and the processes become sterile in from four to six weeks, whilst if the peritoneum is involved the process is usually successfully limited by a protective exudate which in the majority of cases resolves without abscess formation and is frequently followed by restoration of tube and ovary function.

It is particularly with the treatment of gonorrhea in women that Cary concerns himself, and he frankly states that as a rule it is badly carried out and in the direction of excessive activity. In the acute stages, usually not seen, rest is regarded as of major import, whilst douches are avoided, excepting in the form of washing repeated twice a day for the purpose of Vaccination is regarded as futile. In the chronic cases it is well recognized that infection is most persistent in the cervix, in Skene's glands, and in the ducts of the vulvovaginal glands. Skene's glands are best cured by cauterization, either with carbolic or a fine cautery point; the cervix, according to Cary, by a 10-per-cent solution of silver nitrate, vaccines not having proven particularly serviceable. In accord with the general feeling upon the topic, operation is not considered advisable during an acute attack of salpin-A general peritonitis due to the rupture of a pus tube may call for a laparotomy and drainage; or the formation of abscess within the exudate may require drainage through the cul-de-sac.

A very conservative view is expressed in regard to operation, it being held that resolution will be accomplished in the majority of cases of salpingitis and pelvic peritonitis by time, douches, and tampons.

Persistent and disabling symptoms in a wage-earning woman, in whom the early and permanent cure is more desirable than fertility, may call for double salpingectomy, hysterectomy, and possibly appendicectomy. This method of procedure will cure 90 per cent of cases. It is held that operation may be safely performed after resolution of the exudate and at least four weeks' subsidence

of febrile reaction. In chronic cases decreased virulence of the organism and acquired immunity from long-standing infection make safe the closure of the abdominal wound after laparotomy. Particular attention is called to the fact that the most astonishing restoration of normal conditions within the pelvis may follow the gravest gonorrheal lesions.

Hussey notes in regard to the gonococcus in the puerperium that this infective agent may lie dormant for an indefinite period of time in the cervix, and that it may under favorable circumstances acquire new virulence and light up fresh inflammations. Clinically gonococcus infections differ from the septic ones in the mildness of the systemic symptoms, the tendency to appear during labor, or in the second or third week of the puerperium, and in the chronic course which they run. Pus-tube formation is more frequent and pelvic cellulitis less so. and the patient rarely presents the appearance of profound illness characteristic of other forms of sepsis. Moreover, the prognosis is usually good.

Although it is true in regard to both the male and the female that a gonococcic infection once implanted may last for months or years, and in either may produce permanent crippling, the great majority of these cases recover completely and fairly promptly. Those attended by most complications and most persistent in their course are usually the ones which have been treated vigorously and by the application of strongly irritating antiseptic solutions. All infections recover by a process of inflammation and acquired immunity. The curative inflammation is excited by the infection itself. It may be hyperacute for the result desired, in which case sedatives are required. It may be indolent, in which case stimulants are required. The best results are obtained by a wise choice of medicaments which need not be in themselves antiseptic. The acquired immunity is doubtless dependent upon the condition of gen-Therefore treatment having eral health. for its end the best maintenance of this condition will also most promptly accomplish a cure.

#### TUBERCULAR EPIDIDYMITIS.

This affection usually develops in young men painlessly, and is first discovered by feeling a nodule in the scrotum; it is often unattended by other demonstrable focus, ultimately softens and discharges with little or no pain, and becomes bilateral. It may or may not be accompanied by a tuberculous seminal vesiculitis, prostatitis. cystitis, or nephritis. Its clinical recognition is easy, and the therapeutic indications are fairly plain though not universally recognized. In the past it has too often been the custom, and it is so even at this day, to practice a castration in cases seen in the early stages of unilateral involvement. This in the majority of cases is followed by involvement of the other side. for which, if unilateral castration has been performed, the second operation has often been practiced. Though a cure probably results as far as the tuberculous infection is concerned, the patient may be left in a deplorable psychic state.

In a most instructive study of this subject based on 153 cases, Barney (Boston Medical and Surgical Journal, Dec. 14, 1911) notes that with one exception no case showed definite evidence that the tuberculous involvement of the epididymis followed a gonorrheal inflammation. over, most of the patients had never had venereal disease, nor was trauma a factor of etiological importance. Eighty per cent of the cases had lost weight, often to an extreme degree; some had gained. Sixty per cent had pain, usually trifling. patients were as a rule subject to characteristic exacerbation in which pain was intense, abating with rupture of an abscess and the establishment of a fistula, or by absorption of inflammatory products. Adherent scrotum, with or without fistula, was noted in 67 per cent of the epididymes. while sinuses were observed in 53 per cent. Fever was conspicuous by its absence. In only ten cases was the temperature over 100° F. before operation, the epididymes in these being in the stage of acute exacerbation. In 64 per cent of the cases in which this point was noted there was no demonstrable evidence of the presence of tuberculosis elsewhere than in the prostate or epididymis. Active tuberculosis was noted in 29 per cent of the cases, usually in the lungs. Renal tuberculosis developed in but three cases. In two-thirds of the cases the prostate gland was clearly tubercular; in almost the same percentage the seminal vesicles were in the same condition. From 114 patients there were extracted 92 testicles, four castrations being double. author states that the testicle itself appears to have been involved in 60 per cent of these. Pathological and clinical experience does not seem to bear out this statement. since in 71 cases in which a pathological report was given, 21 were definitely free from tuberculosis; 50 were described as tubercular, but as the records make no distinction between epididymis and testicle, it is impossible to draw any conclusion from them.

Barney holds that a very small percentage of testicles are affected by the tubercle bacillus to such an extent that orchidectomy is indicated. It is a fact with which most will agree that even when the testicle is infected to a considerable degree the fire burns itself out when the fuel furnished by the epididymis is removed. Allusion is made to 50 epididymectomies, single and double, with and without vasectomy. Of this number not one has returned for subsequent orchidectomy, and in an investigation of the end results of these cases no relapse in the testicle itself has been found. Of 33 untreated affections of the epididymis the second side became involved in 18 (55 per cent) within one year of the time of invasion of the first side. Among the operated cases 10 out of 19 (52 per cent) returned for operation on the second epididymis within one year after removal of the first. Since the patient is usually already sterile there can be no objection to epididymectomy with vasectomy. This operation rather than the one of orchidectomy is so abundantly proven by universal experience that total excision should be reserved only for the very exceptional case.

### REPORTS ON THERAPEUTIC PROGRESS.

#### BURNS AND SCALDS.

ORMSBY in the London Practitioner for October, 1911, writes on this topic. He reminds us that there are innumerable methods of dressing burns and scalds, but it is best perhaps to describe a few of the most modern and, on the whole, most successful plans. First, however, one must insist on the great and insuperable disadvantages of all oily dressings-i.e., carron oil and its antiseptic modifications-in that sepsis is extremely liable to follow their use. This point is worthy of consideration, because the lay mind has only two fixed ideas relative to burns: "No water: much oil"-consequently, as we are setting out on treatment directly in defiance of ingrained notions, we must prepare to defend our position in no doubtful way.

Before any dressing is applied we must attempt, as far as possible, to render the parts surgically clean. This is the more easily accomplished if we consider that the amount of shock present does not contraindicate the administration of light anesthesia. When the patient is thus guarded from increased shock we cut away all injured tags of tissue, snipping and removing all bullæ, and also, by douching with warm saline or mild antiseptic solution, attempts are made to gain asepsis. If the patient is very dirty the part may be cleansed by rubbing with a paste composed of commercial chloride of lime to which a crystal of sodium bicarbonate has been added, and then, when a comparative degree of cleanliness has been obtained, every trace of lime is removed by copious saline douches. When this cleansing process is impossible, while the patient is in the bath everything possible to secure cleanliness, without at the same time greatly increasing shock, is

done. The patient is now ready for the dressings. Long strips of lint of varying sizes soaked in a solution containing picric acid 1½ drachms, absolute alcohol 3 ounces. and distilled water 40 ounces, are lightly applied all over the injured area; next to this lint sheets of wool are placed, and the two layers are retained in position by means of a broad bandage. It is of importance that any bandage should be so arranged that a minimum of movement will be required for its removal. Provided one has reason to believe in the asepsis and antisepsis thus obtained, this is quite sufficient dressing for two, or even three, days, with occasional changes, provided hematuria, gastrointestinal disturbance, fast pulse, and high temperature do not lead one to diagnose picric acid poisoning. At the end of ten days, or sooner if there is any cause, the picric acid dressing is changed for one consisting of equal parts of boric lotion and hydrogen peroxide. This latter dressing, with daily changes, is usually all that is required up to the time of complete recovery. If at any time suppuration manifests itself, the part must be thoroughly and frequently cleansed by douching with warm boric or other mild antiseptic lotion, and either of the above dressings replaced. When only a small area has been injured and the picric acid treatment has been successful in preventing sepsis, one may substitute after a week zinc oxide ointment spread on thin protective tissue. This is pleasant for the patient and it seems often to increase the rapidity of the healing process, but one must watch with great care at each daily dressing for any sign of the inroad of pyogenic organisms and promptly meet their presence by free douching and return to the antiseptic measures recommended at first. During all this period it is hardly necessary to say that the patient's general health is carefully watched, and any indications for systemic treatment immediately acted upon.

Of other methods of dressing aluminum acetate has recently been strongly recommended as an application, and it would appear to be of considerable use, at least for injuries of small extent. It has the

distinct advantage of comparative cheapness and of leaving no stain; it is applied as a watery solution of one-per-cent strength. Gauze is soaked in this lotion and applied to the injured surfaces. This gauze is then merely moistened with the solution and need not—indeed, had better not—be changed for several days. The small burns so often met with on the hands or feet are admirably treated by this means, especially as pain is greatly relieved, and in such injuries pain is the preëminent symptom.

Another comparatively new method of treating burnt surfaces in which a fair degree of asepsis has been obtained by the proceedings above mentioned is to spread over the raw area strips of sterilized omentum of the ox. This material, known as cargile, immediately on being smoothly laid on the part applies itself closely to the surface. Lint soaked in weak boric acid solution is then placed over the cargile, and the lint only is then changed about once daily in accordance with the amount of discharge which passes through the porous membrane. The cargile does not need changing, as owing to its porosity it does not retain the secretions of the raw surface. The advantages claimed by its supporters for this method is that the dressing-i.e., that part which is in contact with the wound-has not to be changed; that it relieves pain quickly and to a marked degree; and that it prevents to a large extent the introduction of microörganisms without keeping back the discharge which is always present and which offers so good pabulum for bacteria.

Of these various dressings, picric acid has now stood the test of time, and although it cannot be considered ideal, if one intends to adopt a routine treatment for these injuries it is one on which reliance can be placed. It has, however, the obvious disadvantage for some patients of staining everything with which it comes in contact, and consequently when dealing with a case in which this is a matter of prime importance some of the other methods must be adopted.

## LETHAL CARDIAC ANAPHYLAXIS IN THE RABBIT.

In an article in the Journal of Experimental Medicine of November 1, 1911, AUER renders these conclusions:

Acute lethal anaphylaxis in the intact rabbit is caused by failure of the heart.

This failure of the heart is due to a change in the heart itself; it is peripheral and independent of the central nervous system for its production.

This change in the heart is shown anatomically and functionally by decreased translucency, change in consistency, and by failure to respond to stimuli, and is probably to be classed as a chemical rigor.

The rigor of the heart is most pronounced in the right ventricle, the wall of which may be gray, stiff, very tough to the finger-nail, and non-irritable.

Cardiac stimulants of the digitalis group seem to exert a harmful effect when injected in acute anaphylaxis.

Blood coagulation is delayed; a loose clot forms after one-half to two hours.

Antianaphylaxis is produced when the animal does not succumb to the injection.

When anaphylactic death is delayed for about one hour, a well-developed rigor of the white muscles of the thigh and of the diaphragm may occur while the animal is still alive.

Friedberger's statement, that the lungs of guinea-pigs dead from acute anaphylaxis are not characteristic of anaphylaxis for this animal, is shown to be baseless.

## BLINDNESS FOLLOWING THE ADMINISTRATION OF ORGANIC ARSENIC.

MCALESTER in the Journal of the Missouri State Medical Association for October, 1911, discusses this topic and says that from the combined reports the following facts are gathered:

The toxic effect of all organic arsenic compounds is somewhat different from that of the inorganic arsenic, tinnitus, deafness, vomiting, pain, and anuria being chiefly clinical manifestations. With "606" eruptions resembling scarlatina may appear with

the development of a temperature that may rise to 104°. This usually occurs from the eighth to the tenth day, and resembles the effect of serum treatment—the effect of the antigen creating the toxins. The field of vision becomes contracted first, more so on the nasal side, blindness finally resulting. The process is that of quinine amblyopia without the recovery.

Ophthalmoscopically there are to be seen fine vitreous opacities, narrowing of the arteries, and finally a typical picture of optic atrophy. The progress of the atrophy varies from a few weeks to a year or more.

It appears that the previous use of arsenic predisposes the individual to the influence of other arsenic compounds. Watermann thinks that tabetic atrophy, alcohol, mercury, and arsenic render the patient more liable to arsenic amblyopia.

There is little to be gained from the study of the dosage or the method of administration. It cannot be decided from the data in hand whether bad results are from too great single doses, or from making them too close together, or giving too much in toto. From existing data one can arrive at any conclusion, but it seems that the small, often repeated dose is the most dangerous. It may be because this has been the usual method of administration. As Schrimmer and Beck point out, it is uncommon for two doses following each other at short intervals to produce blindness; still it does occur, and it is much safer to give one large dose, Ehrlich's "dosis magna sterilisans," than small, often repeated doses. The amount of the dose of these substances varies as the toxicity varies. Some patients have stood enormous doses of atoxyl, while atrophy has followed eight doses of 0.1 gramme.

#### BUTTERMILK AS AN INFANT FOOD.

This subject is considered by NEFF in the Journal of the Missouri State Medical Association for October, 1911.

He does not believe that buttermilk should be considered as a substitute for sweet milk in the feeding of healthy infants.

His experience proves to him that the

cases for the feeding of buttermilk as for any other form of milk should be selected, and that the daily weight and other evidences of gaining should be closely watched.

Buttermilk is more especially suited to sick infants, those with marasmus, chronic enterocolitis, exudative diathesis, and those that are commonly termed difficult feeding cases.

It may be given for a period of several months without causing unfavorable symptoms, and top milk may be gradually added if desired.

It is especially of value in the summer months, at which season it will be better tolerated and will produce better stools than the same case would have done on a sweet milk mixture.

Chilling and proper handling of a clean fresh milk is essential to the successful administration of, and good results in, buttermilk feeding.

#### RELATIVE EFFICIENCY AND DANGER OF THYMOL AS COMPARED WITH OTHER REMEDIES FOR HOOK-WORM DISEASE.

SCHULTZ in the Journal of the American Medical Association of September 30, 1911, concludes after a study of beta-naphthol, male-fern, eucalyptus, chloroform, and thymol that he is justified in reaching the following conclusions:

- 1. Any practical vermifuge to be effective in expelling uncinaria or ankylostoma must be an irritant of sufficient intensity to cause the parasite to loosen its hold.
- 2. It should paralyze the neuromuscular apparatus to hinder the parasite from making fresh attachment.
- 3. Its relative toxicity for the parasite must be either much greater than that for the host or be much more readily absorbed by the former than by the latter.

Each of the above remedies is absorbed more or less from the alimentary tract, and Tenholt has even gone so far as to assume that only such drugs as are absorbed can be active in expelling ankylostoma. Since their method of taking food is by way of the mouth they must of necessity be poi-

soned by ingesting the tissues of the host already impregnated with the toxic substance, and if the host does not absorb sufficient thymol, beta-naphthol, male-fern, etc., they remain fixed to the intestinal mucosa and are not expelled by the purgative.

The author's present experimental data suggests that this is at best only a part of the truth. It happens that drugs like thymol when combined with iodine or the benzole radicle are much less active vermicides than thymol itself. It is also true that thymol iodine, being much less soluble than thymol, is absorbed to a less extent by the intestinal mucosa. A priori this would seem to support the idea of Tenholt that thymol iodide has no action on hookworm because none of the drug is absorbed by the But if the worms themselves be studied in contact with solutions each of thymol and thymol iodide it is possible to explain the reaction of the worms toward the two drugs on the basis of amount of drug in actual contact with the parasite and the effect of introducing the iodine atom into the molecule, and thus lowering its toxicity. While, therefore, the drug absorbed by the host and ingested by the parasite as a part of the cell and plasma may have a toxic action on the worms, it seems that such drugs as thymol, male-fern. chloroform, and beta-naphthol act by direct contact with the worms, causing rapid vermiform movements, and if the irritation is sufficiently great the worms finally attempt to escape. From now on until paralysis sets in not a little of the surrounding media is ingested, since the mouth parts of the parasite are kept in constant action. stage the intestinal contents of the host ought to be expelled so as to get rid of the surplus drug and the poisoned or anesthetized worms. Judging from the action on the worms in vitro, two to three hours seem to be about the time when the cathartic should begin its work. In the case of chloroform and eucalyptus the cathartic in the form of castor oil works hand in hand with the chloroform.

In conclusion it may be said that at pres-

ent thymol is one of the most toxic vermicides for ankylostoma thus far proposed. It is easy to obtain, keeps well, is cheap, and is easily administered; it kills the parasites instead of merely paralyzing them. When taken under the care of a physician who is careful to gauge the dose in accordance with the physical condition of the host, it seems to be the best all-round remedy thus far studied. While dangerous in large doses, it differs from beta-naphthol, male-fern, and chloroform, in that the danger is at once apparent and can be controlled by heart stimulants and by methods that help maintain a good blood-pressure until the drug has killed the parasite and the cathartic has removed the excess of thymol. Whereas with the other remedies just mentioned the danger-signals are less obvious, and usually it is only after irreparable damage is done that one is aware that his patient is in danger of any after-effects.

Beta-naphthol is probably the next pure chemical substance that ought to be tried more extensively on human hookworm subjects. Persons affected with kidney lesions ought not to take it, and when used the urine should be examined to determine whether it causes albuminuria. If the maximum dosage of 2 to 4 grammes, divided into two parts and given an hour apart, does not cause renal disturbance in adults, beta-naphthol has much to recommend it as a hookworm remedy.

Male-fern at present has not much promise in this country because of the lack of care in collecting the rhizome and in preparing an active ethereal extract. This, however, is a condition which doubtless would soon be remedied if once considerable demand existed for an active extract.

At present there is but little reliable data as to the efficiency of "Hermann's mixture" for expelling human hookworms, or what percentage of cases might show aftereffects. It seems unnecessary to add such an irritating oil as eucalyptus globulus, and if chloroform is used it ought to be given with plenty of oil. It is best to divide the maximum 3 Cc. dose, for a vigorous adult, into three parts, 1 Cc. of chloroform to 10

Cc. of castor oil, given at hour intervals. Should vomiting occur before the chloroform is taken, stop the treatment, and if necessary change to thymol or betanaphthol. By thus regulating the dose of chloroform, the author has had excellent results with dogs; it has proven rapid in its action, and thus far not followed by any evil after-effects. Should the chloroform-castor-oil mixture act as favorably in human beings as it has in dogs, it will prove a universal worm remedy of great importance.

Finally it may be said that the best of remedies are but weak instruments of defense in stamping out this degrading dis-The weapon of offense must after all be proper disposal of fecal matter so that infection is rendered impossible. And what can be more effective in accomplishing this than the cultivation of a healthy public sentiment which will insist on its communal rights in this matter, protect the innocent, and by proper police regulation quickly punish the offender? To this end it would seem that the most effective line of attack is that led by Stiles and others who are endeavoring to educate the masses as to the importance of proper sanitation.

# THE EFFECTS OF PILOCARPINE AND ATROPINE UPON THE AMYLOLYTIC POWER AND COMPOSITION OF THE SALIVA.

EWING gives these conclusions in the Journal of Pharmacology and Experimental Therapeutics for September, 1911:

- 1. The volume of the normal saliva, its amylolytic power, and the amount and percentage composition of solids secreted, remain approximately constant during a continuous period of secretion of six or eight fifteen-minute periods. If there is any change, it is a very slight falling off of the percentage composition of organic solids, and at times of the amylolytic power.
- 2. Pilocarpine reduces the relative amylolytic power of the normal saliva from 30 to 60 per cent. Although the relative amylolytic power of the saliva is much diminished by pilocarpine, the amount of maltose produced in the total volume of saliva

secreted in a given period, after the administration of this drug, is greater than that produced by the amount of normal saliva secreted in the same length of time. "The efficiency" of the secretion is therefore increased by pilocarpine.

- 3. Pilocarpine increases the amount and tends to increase the percentage of both the organic and inorganic solids of the saliva; the greatest increase is in the organic constituents, however. Any percentage increase of the solids is not nearly so great as the increase in the actual amount secreted.
- 4. Atropine diminishes the amylolytic power of the saliva from 15 to 30 per cent.
- 5. Both the amount and percentage composition of total solids secreted are greatly diminished by atropine. The decrease is in the organic constituents.
- 6. Pilocarpine and atropine affect the factors which influence both the "trophic" and "secretory" elements of the saliva.
- 7. The effect of pilocarpine and atropine upon the secretion or activity of the ptyalin of the saliva bears no definite relation to the action of these drugs upon the other physicochemical properties of the secretion.

#### TREATMENT OF VISCEROPTOSIS.

The Australian Medical Journal of September 16, 1911, contains an article by HONMAN on this topic.

When there is any doubt whether an abdominal support would give relief, the writer straps the lower abdomen with broad strips of Mead's plaster, and if the patient feels benefited by that (and he generally does) he uses the old strapping when removed as a guide to the belt; if the abdomen is tender and complaint is made of the pressure of the belt giving pain, he gets the colon washed out by enemata, and it is not an unusual occurrence to wash out undigested food that has lodged there for some days. In spite of the daily opening of the bowels by means of saline purges, in testing the time taken for the passage of feces through the bowels by means of charcoal, he has found that while charcoal comes through in the average normal time (twelve hours), yet washing out has brought away undigested food, such as pieces of oranges which have been taken two or three days before. He therefore begins the treatment by taking care the colon is completely emptied.

The writer has abandoned kidney trusses and kidney pads, as he considers by increasing the pressure on the upper abdomen they aggravate and increase the bowel In only one case did he see any benefit derived from a kidney truss (and that was in a case in which torsion of the kidney produced most of the symptoms), and has recourse only to belts which support the lower abdomen, supplementing the support in some cases by a pad occupying the lower abdomen, and in others by a light spring fixed in front and drawn back by means of straps attached to the back of the belt. In all cases he recommends them to be applied lying down, and to be worn constantly.

. In some cases the patients object to their use on the score of their figure, or the trouble in putting the belts on. In these cases he recommends the straight-front corset, so that pressure can be exercised on the lower abdomen. This is very useful, and it does away with the crutch piece, which is so objectionable to most patients.

A support which was devised by a patient who was herself a great sufferer from kidney and bowel drop, and which is very satisfactory, the author describes. Attached to the lower part of the front of the stays are two flaps with buckles, which are drawn back by two straps of surgical webbing, which are fixed to the ribs of the stays at the back. He thinks in many cases this supplies the support required.

The medicinal treatment chiefly consists in treating the constipation; enemata to empty the bowels being preferable to strong purgatives, and correct dieting with the administration of liquid paraffin (its greasiness, however, is found to be very objectionable to some patients), are of the greatest help to remedy this. He has found that a pill with colocynth and cascara, with one-third

of a grain of extract of belladonna and nux vomica each, is the best form of aperient.

The general health should be improved by tonics; massage and electricity should be used to endeavor to restore the tone of the abdominal muscles. Considering that visceroptosis results from the dragging of the hepatic flexure on the transverse colon when it is not properly fixed, plus of course the predisposing causes, the author has endeavored to remedy this condition by operation. His attention was first called to this being the case by an article by Mr. Stanmore Bishop in the Lancet of August 3, 1907, and since then he has adopted his method in nephroptosis, adding to it an additional fixation of the hepatic flexure to the lateral posterior wall—a step which he has only recently found is advocated by Earl Harden, of Cincinnati.

That the dragging of the colon pulls down and partly occludes the pylorus and interferes with the gall duct is, he thinks, undoubted, and with the relief from this drag the symptoms are alleviated—at any rate, after a period of some years, the patients still expressing themselves as being relieved.

## TREATMENT IN CIRCULATORY DISORDERS.

In the Boston Medical and Surgical Journal of November 2, 1911, LAWRENCE tells us that for the past six months he has been studying the effect of different preparations used for lowering the blood-pressure. For this purpose cases were selected which had a systolic pressure of 180 mm, or over. During the observations the patients were on a limited, definitely measured amount of liquids, and on a diet which did not vary from day to day. The amount of urine excreted was carefully measured and recorded. Observations were taken with the Faught sphygmomanometer, having an arm band of 12 mm. in width. Observations were taken twice daily, and at the same times each day, under all possible precautions to exclude the influence of meals, mental disturbance, etc. The drugs studied have been nitroglycerin, sodium nitrite and

erythrol, mannitol, and a preparation called vasotonin. The effect of venesection, hotair baths, high-frequency and electric light baths was also studied. Systolic and diastolic pressure and the pulse-rate were recorded at intervals of five to ten minutes, according to the drug studied, through the observation.

As Dr. Arnold has found, so also has the author, that nitroglycerin has an effect lasting about ten minutes, and he got no greater fall of pressure than 15 mm.

Sodium nitrite begins to act in ten to fifteen minutes; the maximum fall is reached in about twenty minutes and lasts twenty to thirty minutes, the original pressure being again reached in about two hours. The maximum fall obtained varies from ten to forty millimeters.

Erythrol produces about the same effect, except that the return of the original pressure is slower.

Mannitol gives about the same results as erythrol.

With all these it is essential to work with a fresh preparation, as old drugs have been found to be inert. This has been especially marked in the case of erythrol.

With vasotonin, a combination of yohimbim and urethan, the author has had rather surprising results. Reports from Germany state that both in animals and in man it caused a fall of from 20 to 40 mm., which lasted from four to six hours, and that three to four injections during as many days would maintain the blood-pressure at a level lower than the original for about a week. In the five cases he has studied the results have been exactly opposite, the injection of the drug being always followed by a rise in pressure, and occasionally accompanied by more or less serious disturbances; one case showing a severe attack of angina pectoris, coincident with the rise The duration of the rise in pressure. averaged from two to four hours.

Venesection in the few cases he has had opportunity to study produces a gradual fall of from 10 to 40 mm., which is maintained for sixteen to twenty-four hours.

Hot-air baths, electric light baths, and

high-frequency are not constant in the effect produced, causing a fall of 10 or 15 mm. in about half his observations. In an equal number no result was observed.

In all cases a fall in systolic pressure, caused by any of the above-mentioned methods, was accompanied by a similar, although less marked, fall in diastolic pressure, and usually by a temporary acceleration in the pulse-rate. Respiration occasionally showed a temporary quickening.

In eighteen cases the author has studied with Dr. Edward Young the effect of a lowered pressure on the elimination through the kidneys. Their method was to perform the Geraghty test at different levels of pressure, the amount of dyestuff and of urine being carefully estimated at such levels.

In fifteen out of the eighteen cases more urine and more coloring matter was excreted at a lower pressure than at a higher one. The differences in some cases were small, but in all but three were outside the limit of error. In three cases the better excretion was obtained at the higher level of pressure. The tests at the different levels were performed as near each other as possible, in order to eliminate the possibility of any change in the condition of the patient other than that produced by the change in blood-pressure.

These results are rather surprising, and not in accord with the general clinical idea of the effect and purpose of high blood-pressure. The author has found in the literature a few articles reporting isolated cases in which the use of vasodilators was accompanied by increased excretion of urine, but no explanation for the occurrence has been offered, and he has none.

The fact, however, that the pressure may be lowered and thus lessen the work of the heart without lessening the excretion by the kidney seems to be important.

ARNOLD, writing on this subject in the same issue of the same journal, says that it is well recognized that digitalis or its preparations do not agree with some cases of myocardial degeneration. Consequently, it must always be used with cau-

tion in this condition. He does not think we can yet satisfactorily explain why it does not agree with some of those cases. nor can we always tell beforehand whether it will agree or not. However, the author asserts he has been more and more impressed with its usefulness in these cases. if the amount is properly adjusted. It is rare that two or three minims (or five drops) of the tincture, repeated twice a day, will do any harm, and it is safer not to begin with more than five minims (or ten drops) three times a day. is relatively slow of absorption, consequently its effects are not quickly realized. Ordinarily in a day or two we can tell whether its effects are to be good or bad, and whether the dose is sufficient to produce results. It is well to stop at a dose that is producing recognizable improvement, rather than to increase the dose in the hope of securing more rapid progress. It is easy to give too much, and, owing to its slow elimination, any undesirable effects that it causes may last some time. Because its action persists for some time on account of slow elimination, it is almost always safe, when one suspects the dose is too great, to omit it for a time and watch the results. If conditions become better, one is giving too much; if they are not as good, one is warranted in cautiously increasing the dose. In some cases the dose must be increased considerably before favorable results are obtained. This is especially true when there is present a relatively recent dilatation of the heart.

The limits of the author's paper do not permit a discussion of the merits of different preparations of digitalis, nor the variability of the strength of the same preparation as obtained from different sources. However, he does state that, if the action of the drug is studied intelligently in a case, one can generally get satisfactory results from any standard preparation obtained from a reliable druggist. He is aware that experiments show considerable variation in the strength of those preparations, yet in any supposedly reliable preparation there is sufficient strength to get results if the dose

is properly adjusted. Our present knowledge of the chemistry and physiological action of various preparations from digitalis is so unsatisfactory, and our knowledge of its exact action in different circulatory conditions is so imperfect, that the use of this drug in any given case is now essentially experimental rather than scientific. While variability in strength is undesirable, after all it adds but one more uncertain factor that must be tried out experimentally in a given case. He does not wish to be misunderstood. He is in favor of securing uniformity in the strength of digitalis preparations as far as possible, and the best attainable is none too good, but he does wish to combat the idea that we must have a preparation of a given strength in order to get any results, and that nothing else is useful. Clinical experience does not warrant this deduction.

Objection is sometimes made to digitalis in these conditions under the impression that it increases the blood-pressure. In his experience this does not occur from small or moderate doses of the drug. When the blood-pressure is low because of lack of power in the heart-muscle, we may get a considerable rise in the pressure as the strength of the heart increases, but this is a desirable change.

Strychnine is a very useful drug in these conditions where better cardiac action is desired. Here, again, moderate doses have no effect in raising the blood-pressure, unless it is low because of cardiac weakness. The author rarely uses it in doses larger than 1/60 grain at the beginning, and often in doses of 1/100 grain or less.

Returning to the problem of the treatment of high pressure, it is very desirable to reduce the blood-pressure. The commonest measure employed to secure this result is the use of vasodilator drugs, like nitroglycerin. Sometimes very gratifying results are obtained in this way—at least for a time. Often, however, the action is transitory or no appreciable improvement is secured. As the action of the drug is rather fleeting, it should be given at frequent intervals, and preferably in as small

doses as will produce any appreciable result. When it is needed at all it should be given as often as once in three hours. The dose should be 1/100 grain, or less.

The effect of nitroglycerin on the bloodpressure, as we measure it, is usually lost in about half an hour. Yet the writer asserts he cannot believe that this tells the whole story of its usefulness. The beneficial effects certainly last longer than that in many instances, and one can certainly detect a different quality in the pulse for two or three hours, although the systolic blood-pressure, as we determine it, has returned to its former high level.

Nitroglycerin in his experience rarely lowers the blood-pressure more than 10 mm. for any length of time. Even this small gain is a great help to a laboring heart, and this drug (or one of the other vasodilators) is often a most valuable aid in treatment. It is useful even when the blood-pressure is moderately low, if it is low because the heart is failing.

The cardiac tonics and the vasodilators comprise the drugs that have a directly useful effect on circulatory disorders of the type that is now being considered—where a weak heart is struggling against a blood-pressure that is high as compared with the heart's strength.

Of cardinal importance is rest from physical exertion. This must be more or less complete, according to the needs of the case. Little need be said on this point, for the necessity of physical rest is generally recognized by the profession. Freedom from mental activity and worry is less generally recognized as necessary, but it is of great importance. The diet should be light and easily digested, but must contain sufficient nourishment, otherwise it is impossible to build up a strong heart. The bowels must be regulated so as to secure free elimination from the alimentary canal.

Hydrotherapy is not useful in this condition. The effect of baths that are either cold or hot is generally to raise the blood-pressure. Especially is this true of the Nauheim baths. These baths are so useful for certain chronic cardiac conditions that

a word of caution is needed about cases in which they are not suitable. Hinsdale summarizes the matter as follows: "A positive contraindication to such measures as the Nauheim bath, for instance, is any acute or subacute condition of the heart, or when, in chronic heart disease, compensation is lost. On the other hand, in cases in which there is at least fair compensation the effect of such baths is beneficial. There is improved assimilation and tissue metabolism, the area of a dilated heart is diminished, its strength is increased, and there is a distinctly beneficial effect on the nervous system."

#### ANESTHESIA DON'TS.

LUMBARD in the *Medical Record* of November 18, 1911, gives the following "don'ts":

- 1. Don't use ether or chloroform that is not transparent, colorless, neutral in reaction, or which leaves a residue upon evaporation.
- 2. Don't forget that the selection of the proper anesthetic is as important as its administration.
- 3. Don't forget that it is always your duty to use the safest anesthetic at your command.
- 4. Don't use an inhaler which cannot be sterilized.
- 5. Don't let convenience preclude safety in the selection of chloroform instead of ether, or ethyl chloride instead of nitrous oxide.
- 6. Don't forget that morphine, if properly used in well-selected cases, especially in alcoholics and athletes, is a valuable adjunct to a smooth narcosis, but should be given at least one-half hour before beginning the anesthesia.
- 7. Don't assume because your patient has been anesthetized once without bad results that you do not have to be on the alert in future administrations.
- 8. Don't forget there may be danger although the patient has no organic disease.
- 9. Don't forget that the excessive use of tobacco will often prevent a smooth narcosis.
  - 10. Don't always expect a smooth anes-

thesia with patients who are "bad travelers" on land or sea.

- 11. Don't forget that no one anesthetic will do for all cases under all circumstances.
- 12. Don't be governed by percentages of the amount of anesthetic used, but by the condition of the patient.
- 13. Don't forget that the respiration is the most important thing to watch, no matter which anesthetic is employed.
- 14. Don't forget that the depth of respiration is the most trustworthy of all signs.
- 15. Don't forget that the greatest factor of safety lies with the experience of the anesthetist more than with the anesthetic or inhaler used.
- 16. Don't forget that there is always a chance for any patient to act badly and possibly die under the anesthetic.
- 17. Don't forget that oxygen added to ether or chloroform will often make a narcosis safe that would not be so otherwise.
- 18. Don't forget that it is easier (and much safer) to add to than to subtract from when administering anesthetics.
- 19. Don't be afraid to give anesthetics in chronic cardiac, pulmonary, and renal conditions.
- 20. Don't forget that most trouble in the administration of all anesthetics comes from using too much.
- 21. Don't forget that the color of the ear is a very good guide for the beginning of cvanosis.
- 22. Don't resort to intratracheal or rectal anesthesia when simpler and safer methods will accomplish the same purpose.
- 23. Don't expect to relieve mechanical obstruction in the respiratory tract by hypodermics.
- 24. Don't watch the operation, even if you can do so without neglecting your patient; it does not inspire the surgeon's confidence.
- 25. Don't attempt to secure deep anesthesia in empyema cases; use just as little of the anesthetic as possible.
- 26. Don't forget that surgical shock may apparently deepen the anesthesia and cause alarming symptoms.
  - 27. Don't forget that it is illegal to have

a nurse administer an anesthetic in the State of New York.

As to chloroform:

- 1. Don't let the surgeon hurry the anesthetist, especially when using chloroform.
- 2. Don't have too much covering on the mask when giving chloroform. Always give the patient plenty of air.
- 3. Don't administer chloroform with the patient in the sitting posture.
- 4. Don't advise long or deep inspirations when using chloroform.
- 5. Don't forget that the majority of deaths under chloroform have occurred during the first period of its administration.
- 6. Don't forget that while the toxic effects of chloroform often show themselves very suddenly, they may be delayed for days.
- 7. Don't assume because you have used chloroform with good results in obstetrical cases that you may use it promiscuously in all other cases. Chloroform is not free from danger in obstetrical cases.
- 8. Don't use chloroform in obstetrical work when the uterine contractions are feeble and the fetal heart cannot be heard.
- 9. Don't use chloroform in a small room lighted by gas.
- 10. Don't lose sight of the eye reflexes when giving chloroform.
- 11. Don't administer chloroform by a closed inhaler.
- 12. Don't charge a patient up with chloroform, as is so often done.
- 13. Don't use chloroform for the removal of tonsils and adenoids.
- 14. Don't forget to add a few drops of ether when using chloroform.

As to ether:

- 1. Don't forget that ether is a stimulant, while chloroform is a depressant.
- 2. Don't forget that ether usually gives warning of approaching danger, which chloroform is not apt to do.
- 3. Don't forget that ether has a larger latitude for safety than chloroform; but do not abuse it.
- 4. Don't rely on this comparative safety of ether and allow its administration by a novice unless absolutely necessary.

5. Don't forget, generally speaking, that ether is much safer than chloroform and certainly should have first choice—other things being equal.

As to nitrous oxide:

- 1. Don't be alarmed at slight cyanosis when using nitrous oxide.
- 2. Don't forget that jactitation, when using nitrous oxide, calls for more oxygen.
- 3. Don't forget that nitrous oxide can be given safely at any age.
- 4. Don't forget that nitrous oxide and oxygen is the safest anesthetic known, but it is not always satisfactory to the surgeon.
- 5. Don't fail to have a witness when inducing anesthesia, especially when using gas. Many lawsuits have resulted because this precaution was not taken.
- 6. Don't forget to empty the bladder before giving gas to children, as they often urinate while under its influence.
- 7. Don't forget that nitrous oxide is the safest anesthetic for short operations and examinations.
- 8. Don't expect a good anesthesia when using nitrous oxide on alcoholics.

In relation to the patient:

- 1. Don't starve or purge a weak patient too much prior to anesthesia.
- 2. Don't forget to secure the patient's confidence before commencing the administration of the anesthetic and begin very slowly and quietly. Allow neither talking nor noise in the room. You will thus contribute to a smooth narcosis.
- 3. Don't forget to ask the patient if he is accustomed to sleep with his head high or low, and govern yourself accordingly when administering the anesthetic.
- 4. Don't forget that the nose, mouth, stomach, bowels, and bladder should be empty before beginning anesthesia.
- 5. Don't forget to have teeth, nose, and buccal cavity clean before giving the anesthetic.
- 6. Don't forget to keep the patient warm at all times.
- 7. Don't forget to wash out the stomach when it is full. The anesthetic will act more quickly and more safely.
  - 8. Don't forget that the change of pos-

ture may add greatly to the patient's comfort and safety.

- 9. Don't forget to give a drug fiend his usual dose before anesthetization.
- 10. Don't worry about the pulse if the respiration and the color of the face are satisfactory.
- 11. Don't be alarmed when the pulse is a little weak or rapid. Look for the cause and remedy it.
- 12. Don't go over the safety line in trying to relax the abdominal muscles in acute conditions.
- 13. Don't forget to withdraw the anesthetic immediately when you have a widely dilated pupil, fixed eyeball, and eyelids partly open. This means that too much has been given.
- 14. Don't forget that a dilated pupil with a moving eyeball means that not enough has been given.
- 15. Don't forget to drain the mucus from the mouth by means of a gauze wick or suction apparatus.
- 16. Don't deceive children about to be anesthetized.
- 17. Don't forget, first, last, and all the time, to keep your whole attention fixed on the administration of the anesthetic.

#### QUININE IN THE PREVENTIVE TREATMENT OF MIGRAINE AND ANAPHYLAXIS.

HERZFELD in the Journal of the American Medical Association of November 18, 1911. reminds us that in a paper read before the German Medical Society of New York, February 18, 1908 (Therapeutische Monatshefte, May, 1908), the author tried to establish the fact that typical attacks of migraine had their origin in the gastrointestinal tract, and were due to autointoxication caused by the absorption of certain albuminoids. At the time the tendency was against his hypothesis, but subsequent devolopments in the causation of a varied series of vague diseased conditions are now being referred to as an outcome of the absorption of certain albuminoids giving rise to the condition now known as anaphylaxis, to which class the syndrome

known as migraine or hemicrania is now The author himself has been subject to such attacks; during an attack of gastrointestinal disturbance, certain food products which he can at other times eat with impunity immediately cause an attack of migraine. This led him to attempt to find some medicament which would abort such attacks. Once an attack has reached the severe stage of pain, no abortive treatment is of any avail; only palliative measures are useful. (These measures are described in detail in the above-mentioned paper.) During the early stages, however, in the time of the gastrointestinal disturbance, and during the stage of scotoma, quinine is the remedy par excellence. He has found, after having tried all the various forms of treatment, in the early stages, that quinine is the most effective and is also specific. But it must be given early, at the onset, and in sufficiently large dose. He asserts he has never seen any ill effects from quinine thus administered. He has usually given seven grains each, and he has rarely found it necessary to repeat the dose. He calls attention to the employment of quinine in other conditions considered as anaphylactic-e.g., urticaria of all grades; others have also found it useful in this condition. In serum exanthemata he has used it in two cases, but as they were of rather mild character he is not able to say positively that the rapid improvement was due to quinine alone. In hav-fever it has been of distinct advantage, though he has always used it in conjunction with adrenalin applied locally.

#### TREATMENT OF RHUS POISONING.

HEMMETER writes to the Journal of the American Medical Association of September 30, 1911, that he has considered two etiologic factors in this state. In the first place, it is known that the active poison is an essential oil, and therefore only solvents for oils which have a greater affinity for it than the cutaneous cells can remove it. In the second place, it becomes evident from repeated microscopic eaxminations of the

discharge that all severe cases, at least, are mixed skin infections, due to an invasion of bacteria—even pyogenic cocci—after the rhus had entered.

The first indication is met by an alkaline hot bath (ammonia or bicarbonate of sodium) added to a hot bath and liberal rubbing with ethereal antiseptic soap. Thereafter the parts are bathed in 85-per-cent alcohol and dried.

The second cause is met by the yellow oxide of mercury ointment most effectively:

R Unguent. hydrargyri oxidi flavi, 3ss; Morphinæ, gr. ij.

M. ft. unguent.

There is, however, a third factor, the distress of the itching and the discharge. For this, after going through the above treatment in the morning, the following ointmnet should be applied at night:

Bismuthi subgal., 100 mins.;
 Adrenalin chloride (1:1000), f3v;
 Lanolin, f3j;
 White petrolatum, q. s. ad 3j.

M. ft. unguent.

Rub in liberally, then dust with an antiseptic powder.

The yellow oxide of mercury ointment must precede this and the patient must avoid the locality where the rhus grows. The ethereal soap cannot be used around the eyes. Out of fourteen patients, ten were cured in eight days, and the method soon acquired the reputation of a specific. Seven cases were so severe that the sufferers were confined to bed from four to eight days. The alkaline bath should be taken daily.

# THE DISADVANTAGES INCIDENT TO THE ADMINISTRATION OF SALVARSAN.

Montgomery, in the Journal of the American Medical Association of November 18, 1911, asserts that at present very few men rely on salvarsan in the treatment of syphilis. It is now used in conjunction with the other two great specifics, mercury and iodide of potash. On informing a patient that salvarsan is not an absolute specific for syphilis, clearing up the disease and all its manifestations at one stroke, it

is interesting to watch the mental reaction that takes place. The patient almost invariably concludes that the remedy is worthless. Yet a medical man, for the sake of his own reputation, must tell the facts of the case. Furthermore, it is dangerous to tell a patient that he is cured, for then he is thrown off his guard in case further manifestations of his disease should appear.

Another feature tending to diminish the popularity of this remedy is the difficulty surrounding its administration. It cannot be taken by the mouth, and if given either intravenously, intramuscularly, or subcutaneously, it has to be prepared with minute care, and the injection has to be carried out under the strictest antisepsis, as the drug itself is an irritant, but not an antiseptic.

Many drugs, such as morphine and cocaine, are so bland in their action on the tissues that we never expect any local trouble to follow their hypodermic use. Others, while irritant and harmful, are at the same time antiseptic, and therefore the injured or necrosed tissues are not exposed to the additional danger of sepsis. One of the great points in favor of the administration of salicylate of mercury intramuscularly is that this particular preparation is so slightly soluble as to act almost as powerfully as an insoluble mercurial salt. Among the drugs used subcutaneously or intramuscularly, salvarsan is distinguished by its injurious action on the tissues, and often gives rise to local necrosis. K. Martius found that it did so in every case he investigated. Once, where the injection was thrown into the gluteal muscles, there was no tendency to heal, although three months had elapsed. In two instances the necrotic mass had to be excised. Salvarsan, however, although it acts so injuriously, is not an antiseptic, and therefore if the technique is not perfect, and germs happen to be included in the injection, they have an excellent opportunity to develop in the injured or helpless tissues. Septic infection, sometimes fatal, may therefore be a consequence of the administration of this remedy.

When salvarsan causes an arsenic necrosis that involves the whole skin, an ulcer results that is very slow in healing, and there is no telling when such an ulcer may develop. The author has seen a patient get a necrotic ulcer from an injection of salvarsan who, several weeks before, had received an injection that passed off without any more than the ordinary inconveniences.

Then again, when salvarsan is given either subcutaneously or intramuscularly, the drug may not be absorbed. Schreiber had a patient, a doctor, who became so tired of the annoying deposit of salvarsan as to beg to have it cut out, and over 80 per cent of the drug was removed from the local deposit. The author has seen a number of deposits, and the percentage of their occurrence must be quite high. In many instances they lie almost inert in the tissues, causing pain only when pressed on, while in other cases they are very annoying. When the deposits are very annoying the patient may ask to have the sac emptied, and the affair ends. When such a deposit is inert it is a question what to do with it whether to leave it alone or to advise its removal. If left alone it might possibly give rise to arsenic poisoning by slow absorption, although the author asserts he has never seen it do so. When the remedy lies unabsorbed, it, of course, does not act as an antisyphilitic, and may, if solely relied on to combat a progressive, destructive gumma, occasion serious loss of time. In other words, it constitutes a delay in treatment, possibly at a critical moment.

The intravenous method is undoubtedly to be preferred, as when the patient receives the dose he has it then and there in sufficient quantity, and with little fear of any local trouble. But this way of administering salvarsan constitutes a surgical operation, demanding skill, intelligent care, and the strictest antisepsis, and more care and time indeed are here necessary than in many more pretentious operations. Above all things, an absolutely perfect solution must be obtained, as the injection of solid particles into the venous circulation is not permissible. So important is it to get a fault-

less solution that Schreiber always kept this step under his direct supervision. The author never saw him give the actual injection into the vein, but he never saw an injection given in his clinic wherein he did not supervise the dissolving of the salvarsan. greatest care is also necessary to keep adventitious particles out of the fluid. Sterilized distilled water should be used in making the solution, and no cotton should be employed in stoppering the bottles or in wiping the instruments, lest cotton threads get into the fluid. The solution injected into the veins should not be a concentrated one, as it is an axiom that even harmless salts, when employed intravenously, should be well diluted. Furthermore, if by accident some of the salvarsan solution should escape into the subcutaneous tissues, it irritates far less when highly diluted than when concentrated. A concentrated deposit of salvarsan at the bend of the elbow, where it may annoy for weeks, is not pleasant.

Another important point in the intravenous injection is that the lumen of the needle should be free of rust. The blood in flowing out through a rusty needle is far more apt to clot than if the bore of the needle is smooth. This clot would naturally be injected into the vein in the course of the operation. The author has also seen thrombus of the vein, presumably from the mere injury of the operation. The only symptoms were edema of the arm with some functional incapacity, and a cord-like hardening that cleared up in a short time.

An annoying feature, although a fleeting one, is the severe pain at the shoulder that patients often complain of after about 100 Cc. is injected. This may necessitate stopping the injection for a few moments in order to allow the circulation to readjust itself.

What is called a Herxheimer arsenical reaction may occur on the skin in the course of the first few days. It is a bright-red erythema, usually best observed on the trunk, and the author has never seen it give rise to any further disturbance. It is as well to know of its existence, however, as misunderstandings may otherwise occur.

The salvarsan reaction in the syphilitic lesions themselves is highly important. When, for example, there are a great number of very active syphilitic lesions, as in early malignant syphilis, the temperature reaction may run as high as 105° F. It is therefore important to be careful when there are many lesions, and when there is a low cachectic condition. He has never seen any deaths arise from this source, but at times there are serious inconveniences. In such cases Schreiber advises giving half the usual dose, followed in a week by the other half. Usually, the temperature reaction comes on quite early in all syphilitic lesions excepting those of the central nervous system. The temperature reaction in lesions other than those of the central neryous system occurs at about four or five hours after the injection, while in lesions of the central nervous system it occurs at about from eight to ten hours afterward. This difference is so regular in its occurrence that it may be used for diagnostic purposes. When no syphilis is present, no temperature reaction occurs. The experience of Schreiber is particularly interesting in this respect. Knowing how frequently arsenic is prescribed in psoriasis, and how excellent the results sometimes are, and knowing also that in many instances the favorableness of the result bears some relationship to the size of the dose, he hoped to achieve success in psoriasis by injecting salvarsan, which contains such an enormous quantity of arsenic. The psoriatic patients injected showed no temperature reaction whatever, nor had the drug the least effect on the eruption.

There is not alone a temperature reaction in cases of syphilis in which salvarsan is injected, but there is a marked reaction in the lesions themselves. They become redder and more swollen. The drug acts in this respect somewhat like tuberculin in tuberculosis. As may be readily seen, this is an important matter when it comes to the question of administering salvarsan where the affected organ is of great dignity, as in cases of gumma of the heart or of the brain. If a patient has gumma of the brain, from

which he is suffering severely from the pressure of the tumor, the sudden enlargement of this tumor, consequent on the local reaction, may be of the greatest importance. For the same reason, if a patient has gummatous softening of an artery, giving rise to an acutely dilating aneurism, a dose of salvarsan by increasing the quantity of blood sent to the part may cause irremediable damage. The action of mercury and of potassium iodide is quite a contrast to this. as under these remedies there is no increased afflux of blood to the affected part, but rather a slow melting down of the syphilitic infiltration. Of course, in a patient suffering with aneurism the drug should not be administered intravenously, as the fluid itself would dangerously raise the arterial pressure.

Finally we come to a disadvantage in the administration of salvarsan, which may count for nothing in an altruistic or scientific sense, yet from a practical point of view is of great importance. It is not a remedy to use in office practice or in an ambulatory clinic. The patient should be sent to a hospital, and this in itself constitutes an expense which many patients cannot afford. Even when given intramuscularly or subcutaneously, the administration of salvarsan consumes considerable time. and the physician's time counts for some-When given intravenously a very considerable amount of time is consumed, as the technique amounts to a surgical operation, making its administration still more expensive. This expense the patient might cheerfully undergo if the physician were able to assure him that his troubles would thereby be ended, but we are far from being in a position, even after several injections of salvarsan, to assure the patient that he is permanently cured. In the present state of our knowledge, we still are compelled to advise the patient, although he has taken salvarsan, to take mercury and potassium iodide.

An enumeration of the disadvantages of this new drug serves only to throw into still bolder relief its great advantages. The wonder grows that such a powerful spirillicide can be thrown in such quantities into the circulation with such little risk to the host. In contemplating this marvel, we begin to appreciate the fine scientific imagination of the man who made this possible.

## THE ACTION OF ARSENIC ON THE SKIN.

Washburn in the Wisconsin Medical Journal for October, 1911, states that the exact way in which arsenic brings about changes in the skin has been a subject for much speculation and theorizing, and the author does not attempt a full exposition of the subject. Liebig held that it acted by entering into chemical combination with the protoplasm of the cells and thus arrested activity. The reverse of this, however, seems nearer the true explanation of the facts.

Arsenic does not combine with albumin and does not arrest cellular activity, but on the contrary it stimulates the protoplasm to greater activity.

This stimulation, according to Binz, is due to the liberation in the tissues of oxygen. Arsenic forms two oxides, one with two atoms of oxygen more than the other. When As<sub>2</sub>O<sub>5</sub> comes in contact with air, water, and organic matter, it is reduced to As<sub>2</sub>O<sub>8</sub>, thus liberating two atoms of oxygen. This reduction takes place only where protoplasm is alive or dying. It will not occur in dead matter. Other elements have been found to have this same property of carrying separable, energetic atoms of oxygen; among these may be mentioned lead, phosphorus, antimony, bismuth, and nitrogen.

When oxygen is liberated slowly and in moderate quantities, the result is a formative tendency. This theory is borne out by the fact that if arsenic is fed to horses and sheep there is improvement in the condition of the hide, as well as an increase in size. Giess found that by feeding arsenic to rabbits he could make them grow to enormous size. If, on the other hand, the respiratory process is accelerated and the oxygen is rapidly given and taken, the

nutritive processes of the cells are hurried on beyond their power of endurance. The result then is exhaustion, degeneration, atrophy, and finally death of the tissue.

Epithelium shows an extraordinary affinity for arsenic. It is therefore natural to find a great variety of skin lesions in arsenical poisoning.

The drug is carried to the basal layer and passed on from cell to cell, being finally cast off in the desquamating scales and hairs. The changes produced are essentially nutritive, the tissues in the early stages presenting a condition of well-being. Under continued action, degeneration processes and deposit of pigment take place. Still later there is atrophy, and the epidermis may be very much reduced in thickness. In very advanced cases there is degeneration of the glands of the skin, the sweat and oil glands.

It thus becomes evident that, although arsenic is a drug which is of very great value in the treatment of certain diseased conditions, yet it must be borne in mind that we are dealing with a powerful poison, capable of doing a great deal of irreparable harm when used indiscriminately. It therefore behooves us to use this drug with caution and only where the indications are clear, especially when we are dealing with a chronic disease in which the medication must be continued over an extended period of time.

#### PRURITUS SCROTI.

The British Medical Journal of October 14, 1911, prints a letter from a well-known medical man, who signs himself "A Grateful Patient." The writer states that having passed through a long illness culminating in prostatectomy, he wishes to make a few remarks on his case. About six years ago he had the misfortune to sit rather forcibly on the wooden interval between two seats on the District Railway. Result—a short rupture of the urethra or a primary prostatic hemorrhage; he was in bed for four days, and the recovery was apparently complete. Nearly three years ago he was knocked down by a horse 'bus and kicked

by one of the horses in the perineum. Result-hemorrhage, suppression, and gradually ensuing catheter life. The catheter life became "total," and since eighteen months ago he could not pass one drop of urine. On December 26, 1910, he suddenly began to suffer agonizing pain every time the bladder contracted on the catheter. Hemorrhage was also frequent, and on June 30, 1911, he was relieved of intolerable life by prostatectomy. There were in the bladder, under the shelter of the overhanging prostate, three oxalate of lime calculi, with terribly pointed and sharp "spikes." The prostate was so large that it had to be trisected before it could be removed. Had he been attending any one else, he asserts, he should probably have remembered the x-rays; they never occurred to him, and so, although he states he does not know why, the presence of calculi was a surprise to him! Looking back on his symptoms he sees the unconscious vivisection he selfsubjected himself to by not much sooner diagnosing the calculi. As to the operation, he has nothing to say except that at the age of 65 it has restored him to a sort of urinary adolescence! In fact, he is as well as he ever was in his life.

But there has been a point in his case which has a certain independent interest. For three months prior to his operation he had a most terrible form of pruritus scroti, and after several kind dermatologists had failed to cure it, one among them connected it with the prostatic condition, not knowing there were calculi in the bladder as well. But he warned him that soon after the operation the pruritus might not disappear at once. It still persists in a very minor degree, and is evidently on the up-grade as to cure. The hot summer has been against it and him, and perhaps cooler weather may assist toward its final departure. He asserts that the alleviation of the intolerable itching (especially at night) has been due to the local use of a preparation of Parke, Davis & Co. called "Emollientine," the formula of which is published, and he gratefully acknowledges his indebtedness to this preparation, as he must have tried quite twenty other combinations and hoped-for remedies, but—all failures! He has purposely withheld the names of every one concerned in his case, as he is sure that those to whom he is so indebted would wish. But he is also sure the moral of his case is this: Do not delay operation where the prostatic adenoma is an established fact.

### ARTICULAR FIBRILLATION AND DIGITALIS.

MACKENZIE in his Schorstein Lectures on auricular fibrillation, published in the British Medical Journal of October 14, 1911, points out that not the least in importance of the discoveries resulting from the recognition of auricular fibrillation as a clinical entity is the light that is thrown upon the action of drugs of the digitalis group. The author here refers briefly to only a few points which he has been able to elucidate. He thinks every one who has carefully studied the description usually given of the effects of digitalis on the human heart cannot but be struck with the absence of agreement among the different writers as to the manner of its action, its dosage, and the best preparation. In some instances a peculiar reaction which the observer may have noted is looked upon as the characteristic effect of digitalis, but the mechanism of this peculiar reaction has not been understood. It is a good many years since the author's striking experience with the varied reactions which he obtained from the use of digitalis. He collected a great number of cases; in some he got a definite reaction on the heart, while in others no reaction was obtained. When he separated these into groups he saw that the probable reasons for the varied reactions in the human heart were that digitalis gives a reaction according to the nature of the lesions from which the heart is suffering. It will be observed that if this is found to be correct, we can at once understand how the physiologist and experimental pharmacologist have missed the most important effects of digitalis, for, so far as the heart in experimental work is concerned, they cannot reproduce the conditions under which the physician has to employ the drug.

It is not only in auricular fibrillation that digitalis acts beneficially, for there are many other conditions which benefit by it; but cases of fibrillation stand apart from all others in regard to their response to this drug. All cases of auricular fibrillation are not responsive, for there are factors which render certain hearts unsusceptible, as the presence of fever or extensive fibrous degeneration. It is in certain cases in which there is a fair amount of healthy muscle that its almost specific action is seen. is some ten years, Mackenzie asserts, since he realized this peculiar response to digitalis. When he was appointed to the Mount Vernon Hospital, and later to the London Hospital, he seized the opportunity to start a series of observations under conditions which permitted a degree of accuracy unattainable in private practice. In these observations the same drug and the same dose were given to patients with and without auricular fibrillation. With only rare exceptions all the cases that showed a marked effect upon the heart were cases of auricular fibrillation, for, although the other cases might exhibit some benefit from the use of the drug, they never showed the same tendency to slowing of the heart's rate.

The slowing effects of digitalis are shown in a very striking manner in those cases of auricular fibrillation in which heart failure set in with a great increase of rate of the heart. A patient suffering from extreme heart failure, in whom the rate of the heart was 140 per minute and very irregular, was given one drachm of digitalis per day, and after five days the pulse-rate fell from 145 to 70. At the same time there was a remarkable improvement in the patient's general condition.

The difference in the reaction of hearts affected with auricular fibrillation and those with the normal rhythm was well brought out in a comparison of six cases of mitral stenosis with auricular fibrillation with six cases of mitral stenosis with normal rhythm. The record began with the rate on the day

previous to administration of the drug, and the rate in cases with auricular fibrillation was greater than the rate of cases with the normal rhythm. This, the author remarks in passing, is a point of some interest, for cases of heart failure with mitral stenosis with the normal rhythm rarely have as rapid a pulse as those with mitral stenosis with auricular fibrillation.

In each case the tincture of digitalis was given, one drachm per day, and was continued till nausea or vomiting ensued.

The author makes reference to the fact that digitalis in some hearts induces auricular fibrillation. When this occurs the rate of the ventricle becomes greatly decreased. The following experience will serve as an illustration:

A female aged twenty-one suffered from mitral stenosis following rheumatic fever. She also suffered from slight heart failure. The rhythm was normal. Digitalis was given and pushed till nausea occurred. No change took place in the rate or rhythm. She was then put on digitalis a second time; nausea again occurred, and at the same time there was a sudden fall in the pulse-rate, which became irregular. Tracings taken of the radial and jugular pulses showed that the auricle was fibrillating. The drug was stopped, and four days later, when he was examining her, the heart suddenly increased in rate, became quite regular, and the jugular pulse assumed the auricular form, showing, in fact, a sudden disappearance of the fibrillation and a return to nor-There was a remarkable slowing of the pulse-rate during the period of fibrillation from November 17 to November 20. In this case, as he said, the change from auricular fibrillation to the normal took place when he was examining her. He was particularly struck with the great increase of the rate when the rhythm of the heart became regular.

The peculiar response of hearts affected by auricular fibrillation to digitalis is one of such importance that it is bound to modify the attitude of the profession in its use of drugs of the digitalis group. It gives us for the first time a clear conception of the reason that digitalis has acquired such a reputation as a cardiac drug. It helps us to realize why the drug has seemed so capricious in its action, slowing the rate in one patient and having no effect on another. By the pursuit of observations on the lines suggested, we are gradually obtaining a clearer conception of its effects on the heart itself, and on its nerve supply. The inquiry into this subject is turning out to be one of great interest. The reaction to digitalis varies in different cases of auricular fibrillation, and the reasons for this variation are enabling us to obtain a better insight into the mechanism of the heart's action. This research is, however, only beginning, and it means a long and patient observation of individual cases on the lines being pursued.

### THE CLINICAL VALUE OF VON PIR-QUET'S REACTION.

The British Medical Journal of November 11, 1911, presents this summary of our present knowledge of this subject:

The local reaction that follows in many tuberculous patients when their skin is vaccinated with Koch's Old Tuberculin was described by von Pirquet in 1907, and was at first acclaimed as an easy and trustworthy means whereby tuberculosis could be diag-Since that day, however, much work has been done on the subject, and the diagnostic value of von Pirquet's cutaneous reaction has tended to fall steadily in the clinical market. Thus it was soon found that a positive reaction could rarely be obtained in patients with advanced or extensive tuberculous lesions, on the one hand; while, on the other, the great majority of healthy or apparently healthy adults were found to give a positive reaction. Before long it became the fashion to say that the presence or absence of the reaction was of little diagnostic value in an adult, and that the test was of clinical value only in the case of infants and children. with this limitation to its applicability, the test still gave results that could only be regarded as astounding by the clinician. For example, von Pirquet obtained a positive reaction in a quarter of all children aged one to two, a third of all children aged three to four, half the children aged five to six, and in two-thirds of all children aged from eleven to fourteen. To the clinician. as it has just been said, such figures are astounding, and if a positive reaction is to be taken as evidence that the patient is actually suffering from tuberculosis, incredible. But to the pathologist they seem to err by understating the facts; for Hamburger, stimulated by the clinical results furnished by von Pirquet's reaction, made most careful post-mortem examination of children dying between the ages of eleven and fourteen, and found evidences of tuberculous infection in no less than 77 per cent of them. Going further, and employing a more delicate form of the cutaneous reaction than von Pirquet's-namely, Escherich's modification of it, whereby the tuberculin is introduced subcutaneously-Hamburger obtained a positive reaction in 94 per cent of all children aged between eleven and fourteen years. Naegeli found evidences of tuberculous infection in 97 per cent of the bodies of adults coming to the post-mortem table, and so the conclusion seems to be that the vast majority of humankind, at any rate in Europe, become infected with tuberculosis years before they grow up.

If, then, practically every healthy adult gives a positive cutaneous reaction to tuberculin, the question naturally arises: Has von Pirquet's reaction any clinical value at The answer to this is: By itself, none whatever, excepting in infants. In infants, as Blümel points out, latent or stationary tuberculosis is rare, and up to the age of two years a positive reaction is strong presumptive evidence in favor of an active tuberculous lesion. At this age. therefore, it is of great utility in differentiating tuberculosis from other chronic wasting conditions, such as marasmus, bronchitis, posterior basic meningitis, and so forth. In older children there is a great danger, however, lest a positive von Pirquet reaction, taken in conjunction with slight dulness to percussion or slight abnor-

malities in the breath sounds at the apices of the lungs, should be held to be conclusive evidence of pulmonary tuberculosis. Such signs, definite enough in themselves. though uncertain in their interpretation, are common in schoolchildren with ill-developed chests, deficient muscular development, or obstructions in their upper air-passages. Now that the school doctor is abroad in the land, the temptation to label as tuberculous children with these signs of pulmonary collapse has often been found irresistible, particularly when a positive von Pirquet reaction has appeared to confirm the diagnosis of "active mischief in the lungs." But how far it is from confirming any diagnosis, excepting that the patient has at some time been infected with tubercle bacilli, will be at once obvious when it is remembered that two-thirds of all schoolchildren aged from eleven to fourteen years give a positive reaction, though only a small fraction of those are actually suffering from tuberculosis. In other words, von Pirquet's reaction alone does not enable us to distinguish between active and latent tuberculous lesions; but taken in conjunction with the physical signs and the course of any given case, it may be of great service in diagnosis, and particularly so when it gives a negative result.

It is true that there are certain conditions in which a tuberculous patient often fails to give a positive reaction, excluding for a moment advanced or cachectic cases: during an attack of measles, scarlet fever, enteric, or erysipelas, for example, particularly during the period of the rash; during pregnancy, especially after the sixth month; during a course of tuberculin treatment; and finally, in a certain percentage of patients with latent or inactive tuberculosis the reaction is, for some cause or another, negative, even when the more delicate modifications of von Pirquet's reaction are employed. In most of these conditions the practitioner would hardly be likely to apply the test, and it is only in a few of them, particularly in patients with latent tuberculosis in their lungs or lymphatic glands, that a negative result could mislead him. And even here his error would not be great, if he remembered that the negative reaction only proves that tuberculosis is either absent or latent, and that in the vast majority of his patients there does exist a tuberculous focus that may be called latent, inactive, quiescent, healed, or obsolete, according as his fancy dictates.

## NITROUS OXIDE AND OXYGEN ANESTHESIA.

In the Boston Medical and Surgical Journal of October 19, 1911, MANDELL tells us that the cases in which he has used gasoxygen include nearly the whole range of surgery, except nose and throat and brain work.

In many instances it has been necessary to give a drachm or two of ether with the gas (as the Davis apparatus permits) to produce the required amount of muscular relaxation. The patient is not cognizant of the condition, and this small amount of ether does not cause nausea or vomiting.

All patients are given 1/6 grain morphine sulphate and 1/150 grain scopolamine two hours before operation.

The proportions of nitrous oxide and oxygen vary in every case. The only rule is to give enough oxygen to keep the patient's color good.

In the total number of cases there were only two in which gas-oxygen could not be taken because of persistent cyanosis, and ether was substituted. In neither of these two instances was ether borne well.

The longest case, a tedious breast operation, lasted three and one-half hours, and when the patient regained consciousness she said she felt as though she had awakened from sleep.

Nausea and vomiting, when present after gas-oxygen, seem to depend on the operation, and not on the anesthetic. Curettage nearly always causes vomiting, and after gall-bladder operations nearly 50 per cent are nauseated.

Experience has demonstrated that the surgeon can, by delicacy in manipulation, materially diminish the number of cases in

which it is necessary to add ether to the nitrous oxide. A sharp pull with a retractor will cause the abdominal muscles to contract when steady pressure will not disturb.

The abdominal viscera must be handled gently if one is to obtain a quiet field for operation and avoid the use of ether. This will be readily understood when we remember that gas-oxygen produces a light anesthesia.

Nitrous oxide is much more difficultato administer than is ether.

It is no easier, possibly not so easy, for the surgeon to operate under nitrous oxide than it is to operate under ether, but to the patient the advantages of nitrous oxide over ether are distinct, and may be clearly evidenced by the following facts:

- (1) That he loses consciousness in three or four breaths.
- (2) That he has no strangling or choking.
- (3) That he recovers consciousness immediately when the anesthetic is stopped.
- (4) That he has little, usually no, nausea or vomiting.
- (5) That he can take liquids much sooner after operation.
- (6) That his ultimate recovery is short-ened.

# HEART-BLOCK FROM DRUGS OF THE DIGITALIS GROUP—THE COMPARATIVE EFFECTS OF DIGITALIS, STROPHANTHUS, SQUILL, AND APOCYNUM.

WINDLE reports a case of this nature in *Heart*, vol. iii, No. 1, 1911, and concludes as follows:

- 1. A case of rheumatic mitral disease is described in which various degrees of heart-block resulted from the administration of digitalis, strophanthus, and squill, respectively, during attacks of heart failure with dropsy. Marked improvement in the patient's condition was manifest under the full influence of each drug. The administration of apocynum had no effect on the conduction of impulses.
  - 2. A notable feature in the records, taken

before these drugs were given and after their effects had passed off, was the absence of impaired conductivity as evidenced by the duration of the intersystolic interval.

- 3. It has generally been thought that drugs of the digitalis group as a rule only depress conductivity, when this function is primarily impaired, as evidenced by a lengthened a-c interval. The present case suggests that an actual or potential impairment of conductivity may exist with a normal intersystolic period; the facts of another case incidentally referred to lend support to this view.
- 4. In some of the records absence of ventricular response to the corresponding auricular impulse is shown, though the stimulus is apparently conducted at the normal rate in the beats immediately preceding.
- 5. In some of the figures an extra wave succeeds the blocked auricular impulse; this wave is ascribed to the opening of the auriculoventricular valves by the contraction of the auricle, and their subsequent closure from back flow of the inrushing blood.

## THE TREATMENT OF DIABETES MELLITUS.

Springs in the *Lancet* of October 28, 1911, gives these directions as to the treatment of this disease:

Having found out how much sugar is being passed out on the average from an estimation, if possible, on three separate days, proceed to restrict the carbohydrates in the food. The restriction of carbohydrate has two good effects: First, it lessens the amount of sugar in the blood, and abolishes, except in the most severe cases, the symptoms due to an excess of sugar in the blood and in the urine; secondly, doubtless again through lessening the sugar in the body fluids, the power of the tissues to burn carbohydrate becomes restored. second effect is of fundamental importance. One may easily relieve the patient's symptoms in most cases by restricting his diet somewhat, but we must go further than this and find out what his assimilative power for carbohydrate is, and how much it can be improved. This investigation involves a certain amount of arithmetic and requires the active cooperation of the patient. The procedure will differ somewhat according as diaceturia is present or absent.

If the diacetic acid reaction is absent, and if the urine rapidly becomes alkaline under the influence of bicarbonate of soda, the restriction may be made without fear of causing acid poisoning. Even in such cases, however, the author does not advise putting the patient upon a strict diet at For by putting a patient upon a strict diet one can induce-a diaceturia which has not previously been present, and this is undesirable, even if the sugar entirely disappears. The diabetic, to begin with, cannot oxidize sugar properly; the appearance of the diacetic reaction means that another foodstuff, fat, is also no longer freely oxidized. Whilst, therefore, acknowledging that a large number of glycosuric patients can be put on a strict diabetic diet with impunity, the author advises not to do it. One can produce the same good result by going a little more carefully without the same risk of disadvantage.

There is another reason why it is not advisable to order a strict diet at once, and that is that many patients will find the sudden change so irksome that they will not carry it out properly. The instructions are far more likely to be obeyed throughout if they are reasonably lenient at first. Some patients are but little inconvenienced by the diet prescribed, others need great selfcontrol to adhere to it. One must recognize this, and show sympathy by not asking too much. For the same reason, always allow as much bread as possible, for that is the food which is missed the most.

The following tables may help in drawing up a diet. They are compiled from the modern analyses of Atwater and Bryant, and the foods are arranged in three lists. The first list includes foods which are free from carbohydrate or contain less than one per cent. In the second list the foods contain a small proportion of carbohydrate, much of it in some of them being in the form of cellulose, which is not absorbed.

The third list contains articles of diet which are richer in starch or sugar, arranged according to the amount which they contain.

All patients are allowed to eat freely from the foods in List 1, most patients may also take the foods in List 2, whilst those in List 3 are only allowed when specially prescribed in measured quantities.

List 1. - Foods Free from Carbohydrate or Containing

Dess than I per cent.				
Beef. Mutton. Lamb. Pork. Poultry. Game. Sweetbread. Tongue. Fish.	Turtle. Lobster. Eggs. Butter. Cheshire choese. American " Dutch Gorgonzola " Lard.	Gelatin. Starch-free breads. biscuits and cakes. four. Sugar-free jellies. marmalade. jams.		

LIST 2.-Foods Containing a Low Proportion of Carbohydrate.

The nguies mulcase the percentage or carbony drases				
iver	1   Lettuce	8   Mixed pickles 8   Cauliflower		
masge (nork)	1 Spinach	8 Canliflower		
raha	1 Ovatera	4 Cabbage		
ravfish.	1 Mussels	4 Cabbage		

Sausage (pork), 1	Spinach 8	Cauliflower 5		
Crabs 1	Oysters 4	Cabbage 6		
Cravfish 1	Mussels 4	Leeks		
Scallops 8	Stilton cheese 8	Radishes 6		
Asparagus R	Cheddar " . 4	Mushrooms 7		
Celery 8	Rhubarb 4	Watermelons 7		
Cucumbers 8	Tomatoes 4	Brazil nuts		
LIST 8Foods Rich in Carbohydrate.				

Inst 6 Foods Attent the Cur congarate.				
		Bread (rolls) 56		
" skimmed . 5		Lentils (dried)		
Whey 5	Cherries 17	Bread (toasted) 61		
Oatmeal (thin	Almonds 17	Peas (dried) 62		
gruel) 6		Gingerbread 63		
Strawberries 7	" with cream 18			
Turnips 8				
Carrots 9	Figs (fresh) 19	Oatmeal		
Beet (fresh) 10		Chestnuts (dried) 74		
Onions (fresh), 10		Sago		
Cranberries 10		Tapioca 88		
Pineapple 10		Arrowroot 97		
Ostmeal(boiled)11		1		
		Dried fruits—		
Blackberries 11		Apples)		
Dried peaches 11		Apricots		
Oranges 12		Corrente M		
Paranipa 18	Cocoanuts 28	Dates > to		
Apricots 18		Figs 78		
Currants 18	Mince pie 38	Prunes		
Walnuts 18	Chestnuts	Raisins		
Filberts 18	(fresh) 42	Dalams		
Apples 14		Meal)		
Pears 14		Flours 70		
	Potatoes (fried	Rice to		
(cooked) 16	chips) 47			
Calfa foot tally 17	Bread (white), 58	Vermicelli		
Can problemy. If	· Diest (WILLIO). OU			

### INTRATRACHEAL INSUFFLATION AS AN ANESTHETIC METHOD.

QUINBY in the Boston Medical and Surgical Journal of October 19, 1911, reminds us that within the past year Dr. Elsberg, of New York, has reported the successful administration of ether by this method in something over 100 cases. In Boston, Ehrenfried and Boothby as well as Quinby have used it. Upward of 150 cases in all, supposedly, have been subjected to anesthesia by the intratracheal route, and with no untoward result. There has been no pneumonia caused by it.

The first and most important advantage

of this intratracheal insufflation is found in its use during surgical operations which open the chest cavity, for in contradistinction to all other methods yet used, this is the only one in which proper oxygenation of the blood is performed independently of any respiratory effort on the part of the patient. With it the usual type of external respiration is converted into the internal type. In all the positive and negative pressure contrivances, expiration takes place at a disadvantage, the barometric pressure which exists on the surface of the exposed lung being less than that within the air spaces. This throws an increased amount of work on the right heart, which must compensate. Besides this, there is a tendensy for carbon dioxide to remain too long in the alveolar spaces to the exclusion of the better oxygenated air. In the course of a long operation this has a definite poisoning effect on the heart wall. Both these undesirable effects are avoided by the insufflation method.

Furthermore, the much-decreased number of respiratory movements makes operations within the depths of the thorax much easier than they would be otherwise. Another advantage is that the gullet is left free for instrumentation. This important point was illustrated very well in a case which the author etherized by the intratracheal method for Dr. Scudder. The patient suffered from a rupture of the diaphragm, the left thorax containing the whole stomach, a piece of the transverse colon, and a portion of the great omentum. During the operation it became necessary to empty the stomach of a quantity of fluid which it was found to contain, so that it might be made small enough to pass back through the rent in the diaphragm. Without inconveniencing the smooth course of the anesthesia in the least, a stomach tube was passed. patient made a perfect convalescence.

Still another advantage of the intratracheal method is the very complete aeration produced. Patients recover from the anesthetic very quickly as a consequence of this.

Then, too, though it does not apply to anesthesia as such, the author states he can-

not forbear to mention the great importance of the insufflation method, using plain air or oxygen, for cases of cessation of respiration from any cause. The lives of patients suffering from brain abscess and morphine poisoning have already been saved by it. It is the best method which will "breathe for the patient." Dr. Meltzer has had even this experience. He has given a dog four times the lethal dose of strychnine, then prevented the convulsions by the injection of curare, and by means of the intratracheal insufflation of air kept up a good ventilation till both the strychnine and the curare were excreted and the animal recovered.

In regard to the clinical application of anesthesia by this method, there is little to add to the directions given in the previous paper of the author in November. The air should be warmed and moistened before it reaches the bifurcation of the trachea. It must also contain ether in varying amounts. Any apparatus which will fulfil these requisites and is simple is quite adequate. The apparatus which he has had made for him by Codman & Shurtleff has thus far been entirely satisfactory.

The tracheal tubes are of soft rubber, with perfectly smooth surface free from seams, about fifteen inches long, with finished ends like stomach tubes. Their walls are of a uniform thickness of 1 mm., and for convenience in judging the length of tube which one is using they should be marked in centimeters from 15 to 30.

Before introduction, the size of the trachea above the sternal notch should be estimated and a tube chosen which is about half this size, or a little larger. After a hypodermic of morphine and atropine, the patient should be etherized in the usual way. Then under full surgical anesthesia. with the patient in the Rose position, the mouth gag is inserted, and the sterile tracheal tube introduced, either by a laryngeal forceps, the epiglottis being held forward by the operator's left forefinger, or by the use of a Killian speculum. Previous painting of the pharynx and larynx with cocaine he has found to be unnecessary. passing the glottis, the tube is pushed forward till a resistance is felt, or until 26 centimeters have been introduced (in male adults), as measured against the upper incisors. It should then be withdrawn about one centimeter so as to lie just above the bifurcation, and then connected with the rest of the apparatus. When it is correctly placed, air can be heard to enter both lungs on auscultation.

It is the writer's hope that many surgeons will become familiar with the principles underlying this method, as it is one of undoubted value and promises to be of great aid in the future of thoracic surgery.

### CAUSE AND RELIEF OF PAIN IN DUO-DENAL ULCER.

PILCHER (Long Island Medical Journal, vol. v, No. 9) holds that after the food has left the stomach entirely there is still an outpouring of hydrochloric acid, and in cases of duodenal ulcer this would seem to be greater in amount and concentration than is ordinarily the case. Hence it would seem plausible that the pain of duodenal ulcer, that which comes on several hours after meals and is caused by irritation, is due to hydrochloric acid. The most plausible explanation for the control of pain after the ingestion of food would be that this secretion was in some manner neu-To determine the neutralizing tralized. agent certain animal experiments were carried on, by virtue of which no extraneous secretion could enter the duodenum while the secretion of the duodenum proper was prevented from escaping into the intestine below. By a duodenostomy the recovery of the pure duodenal secretion was provided for.

In every instance the postoperative course was uneventful until between the fiftieth and sixtieth hours, when all the dogs died a physiological death, due to the exclusion of the duodenal secretion from the remainder of the intestinal canal.

As a result of the experiments the author concludes that the cause of pain in duodenal ulcer is the hydrochloric acid contained in the gastric juice coming in contact with the ulcerated surface after it has passed into the duodenum. This conclusion is based on the following observations: (1) Ulcer of the duodenum reflexly excites a hyperacidity of the gastric juice; (2) the maximum amount of secretion of hydrochloric acid in the stomach is due to a direct chemical action and is at its height from one to four hours after meals; (3) it passes into the duodenum as hydrochloric acid, there being no food for four hours after meals for it to work upon; and (4) it does not excite a flow of the duodenal juice directly, and is not neutralized by the small amount present.

The relief of pain in duodenal ulcer follows the ingestion of any substance into the stomach, and is due to a reflex stimulation of the duodenal secretion which neutralizes the acid gastric juice. This conclusion is based on the following facts, already demonstrated by experiments: (1) Food taken into the stomach excites at once a reflex secretion in the duodenum; (2) the duodenal secretion is alkaline in approximately the same degree as the gastric juice is acid; and (3) this secretion is of sufficient quantity and concentration to neutralize the hydrochloric acid of the gastric juice.

Pilcher (P. M.), writing on this topic, observes that the general picture which is presented by a chronic duodenal ulcer is strongly suggestive of its presence, and the indications offered by it for surgical intervention should be taken in the aggregate. When the attacks occur more frequently and are of longer duration, when the periods of relief following the ingestion of food or alkalies are of shorter duration, then surgical aid must be considered. At least ninety per cent of such cases, if treated by a competent surgeon, can be assured of positive relief after the placing of a properly executed gastrojejunostomy.

Bleeding occurs in about one-third of the cases, at least in quantities sufficient to call the attention of a patient to it. It is seldom fatal, but may prove so at any time, and we have no direct or indirect control over it other than by operative procedure.

It is interesting to note that in many instances subsequent to a hemorrhage the attack has temporarily disappeared or become much less severe.

Stenosis is easily demonstrated, if it has reached any extensive degree, by giving the patient raisins and rice to eat the night before the test meal is extracted. If the raisins are recovered the next morning, there is certainly pyloric obstruction.

An absolute indication for operative interference is based on the finding of an epigastric tumor, usually situated to the right of the median line about one inch below the free border of the ribs; this has been present in 15 of the 176 cases observed.

It is seldom possible to excise the ulcer. If it should be small and easily reached such a procedure is ideal, the resulting orifice being sutured in the opposite direction from its long axis. In such a case if the diseased tissue has been entirely eradicated and the lumen of the duodenum unimpinged upon, an accompanying gastrojejunostomy is unnecessary and unwise. The ulcer should in every instance, unless the degree of induration is prohibitive, be enfolded, accomplished best by mattress sutures. They may be introduced with the base in either direction, the loop including the entering vessels. There should in any case result from this procedure a moderate but not necessarily absolute occlusion of the lumen of the duodenum.

If the ulcer runs up to or involves the pyloric ring, its excision with a pyloroplasty, after the method of Finney, can in some cases be accomplished without gastroenterostomy.

If, however, as in the majority of cases, it is found necessary to make a stoma between the stomach and intestine, the jejunum should be pulled up as short as possible and attached to the posterior wall of the stomach, the nearer the pylorus and the greater curvature the better.

The incision should be from above downward, and from the right to the left, forming an angle of forty-five degrees with the vertical axis of the stomach. It is well to

introduce at the upper border of the intestine two retaining sutures, one at either end of the anastomosis, in order to prevent sagging and kinking, as it is very probable that some of the ulcers occurring in the duodenum are consequent to a kinking at the duodenojejunal angle, as has been pointed out so clearly by Lane. The rent made in the gastrocolic omentum should be sutured up to the edges of the anastomosis in order to prevent hernia upward into the lesser peritoneal cavity of the intestines.

If possible, as a final step, a tab of the omentum should be sutured over the enfolded ulcer. This is particularly desirable if it has been found impossible to invaginate the ulcer.

The patient will do better if he is immediately placed in a semiupright position after recovery from the anesthetic.

### NUCLEIN AS A SURGICAL DRESSING.

REDFIELD (New York Medical Journal, Oct. 14, 1911), after quoting Vaughan's studies on the effect of nuclein on the multinuclear white cells of the blood and a rather extensive and on the whole promising clinical experience, decided to try the effect of the nuclein solution as a local dressing for certain infected wounds. The first case thus treated was that of a printer, who had fed his index and second finger into the press, which produced severe crushing of the first phalanx. The wound was washed slightly and dressed with sterile gauze soaked in nuclein solution full strength. Five days later, the dressing having been kept soaked with nuclein solution, the wound was completely healed. A number of striking cases are quoted, on the basis of which the author invariably uses a nuclein dressing when he expects trouble from infected wounds.

### ABDOMINAL LIPECTOMY.

Under this alluring title SHALLENBERGER (Johns Hopkins Hospital Bulletin, November, 1911) reports two cases. In each instance, because of a fat, flabby, pendulous

belly, a slab of skin and fat was removed, in one case weighing a trifle over seven pounds, and in the other measuring 38 centimeters in length by 12 in width, weight not given. Maylord is given the credit of having removed 10 pounds.

The advantages of the operation are thus described by Kelly:

The removal of a slab of fat and a decrease in weight; great addition to personal comfort generally; convenience and comfort in dressing; better pose in standing and better poise in walking; increased activity; cleanliness greatly facilitated; figure changed from unsightly and awkward to one much more natural; the sensitive patient occupying afterward a more normal and natural relation to society.

### INFANTILE PARALYSIS.

TAYLOR (American Journal of Surgery, November, 1911) notes a great increase in the number of cases of this disease. Although the mortality is small the percentage of resulting paralysis is close to 90, as few cases recover absolutely. Attention has been called to the greater number of cases seen in those localities where immigration has occurred from Scandinavia. Anderson's report shows that the cases as a rule have been in unusually healthy children, as has been most often the case in the author's experience, the strongest child in the family being the one often most seriously afflicted. Anderson believes that the disease has undoubtedly been carried from case to case. and in certain instances by a third person. Flexner, however, has not been able to demonstrate the spontaneous transfer of this disease from infected to healthy monkeys by contact, although these animals are very susceptible to it by direct in-He, however, very distinctly oculation. states that this fact does not militate against the notion of contagion in respect to the spontaneous disease in man, as monkeys are not naturally susceptible to this disease unless artificially implanted.

Flexner and Lewis have further shown that the infectious agent is an extremely

minute microörganism. It is ultramicroscopic. Attempts to implant the disease on domestic animals and rats have failed. Flexner thinks, however, that the paralysis seen in poultry, the dog and horse are due to a cause peculiar to the species infected. This is interesting from the fact that in the epidemic in Michigan, in 1907, Griffin reported that many pigs and chickens were also affected. Krause reports an epidemic in which together with the involvement of the humans there was a coincident great mortality among chickens. Taylor was told by a colleague of having heard of two children who had eaten chicken and a dog which had eaten the bones, and all three were paralyzed shortly after. Flexner is inclined to believe that the virus gains access to the cerebrospinal axis by means of the nasal mucous membranes and lymphatics through the cribriform plate of the ethmoid. He also thinks it is eliminated by Intraperitoneal injection of monkeys with spinal cord material from a child who died of paralysis reproduced the disease. but the cord from such infected monkeys would not produce the disease when introduced intraperitoneally in monkeys. peristalsis is minimized by opium and comparatively large quantities of the virus introduced into the stomach and intestines it will reproduce the disease. Taylor's experience has shown that gastroenteric symptoms so preponderate at the onset in cases observed by him that it seemed suggestive that the systemic infection started there. In the human subject there are seldom symptoms suggestive of a coryza at the onset or decline. At the onset 3.1 per cent had throat and nose symptoms. Microscopically the lesions were found in the brain and cord, but more markedly in the latter than in the former, and in the gray matter of the cord more than in the white matter. Mononuclear infiltration forming collars around the blood-vessels preponderated. That the cervical and lumbar enlargements have an abundant arterial blood supply accounts for the greater severity of the lesions at these points.

In contrast to cerebrospinal meningitis, which is a disease of winter and early spring, anterior poliomyelitis is essentially a disease of summer and early fall, and is especially noted during a hot spell. As a rule dry summers seem to have a tendency to lead to more cases than wet ones.

Premonitory symptoms are very probably due to leptomeningeal irritation. They are usually present one to three days before the acute symptoms begin. They consist of more or less rigidity of the spine and neck, and Kernig's sign with unequal rigidity in the two legs. At this time the knee reflex may be increased, only to disappear entirely after the acute stage is reached. Sometimes there is a slight weakness in one or both legs.

Acute symptoms appear in from four to fourteen days after exposure in the epidemic form, but in the majority of the so-called sporadic cases seen it is next to impossible to trace the source of infection and period of incubation. The symptoms divide themselves into cerebral, bulbar, spinal, and neuritic types, depending upon the region chiefly involved. In the cerebral form convulsions, delirium, and drowsiness are present, but this type is rare. In the bulbar form we see the respiratory distress, and 75 per cent of these constitute the rapidly fatal cases of this disease.

The onset begins with slight fever (99° to 101° F.) the first day, with flushed face, intense headache, backache, and increased unilateral Kernig's sign.

Except in the mildest cases, the fever on the second day is highest, but rarely goes to 105°, usually not being over 102°. The pulse ranges from 120 to 140, but is generally of good tone and well sustained, except in the bulbar type.

Spasticity in the neck, spine, and legs is more marked the second day. Tremors and clonic movements may be present, but sleep is quiet, as there is more or less drowsiness. Nausea and vomiting may be the first symptoms noted and lead one to think the trouble is primarily gastroenteric, but these symptoms may be central in origin.

Constipation of the bowels is invariable, and of very nearly as great frequency one finds retention of urine, so that catheterization may have to be resorted to, though this is rarely necessary.

On the third day the fever abates, and on that day or the day following the paralysis appears, converting the previously rather spastic limb into a flaccid one. With the subsidence of the fever there may be some sweating. The headache and backache disappear, but with the paralysis the hyperesthesia begins, if the case is of the neuritic variety.

A severe general paralysis at the onset may clear up in a few days, weeks, or months, leaving paralyzed only those muscles that receive innervation from the necrosed segments of cord. Paralysis of the legs is much more common than in the arms. The most frequent permanent leg paralysis is seen in the extensors of the toes and tibialis anticus.

Next in frequency is the quadriceps extensor of the leg, and often associated with it is paralysis of the adductors.

At times the psoas and iliacus are also involved, but usually only in conjunction with the other lower leg muscles.

Of the hamstrings the biceps escapes most often, and the sartorius of the anterior thigh group is equally fortunate. The calf muscles and flexors of the toes are not nearly so frequently involved as are the anterior group.

As a rule, if a paraplegia exists there is frequently entire dissimilarity on the two sides. Often one side will clear up in six to twelve months.

Of the contracture deformities seen, flexion and outward rotation of the thigh and flexion of the knee are more common than the reverse, owing to the greater frequency of paralysis in the antagonistic groups, although Sever, at the Children's Hospital, Boston, finds adductor paralysis less frequently than does the author.

Of the foot deformities in their order of frequency may be named in the writer's experience talipes equinus, talipes valgus or paralytic flatfoot, talipes equino-varus, talipes cavus, and talipes calcaneus. Similarly in the arm the distribution of the paralysis is asymmetrical, depending on the necrosis in the segments involved, but the deltoid, supra- and infra-spinatus, triceps, biceps, supinators, extensors of the fingers, thenar and hypothenar groups suffer, in the order named, most frequently.

Atrophy becomes marked in from one to six months after the fever and may be extreme. This atrophy involves not only circumferential measurements of the limb, but the bones are also affected in length and circumference. The latter is shown by the x-ray. Delayed use of the limb in neglected cases in which braces or operative treatment have not been employed in young children leads to the most extreme degree of shortening seen, amounting to three or four inches or more.

Kernig's sign of an asymmetrical type, constipation, retention of urine, spasticity of spine and neck, fever of short duration with subsequent flaccid paralysis, render diagnosis simple, but it may be confused with (1) autointoxication with vomiting and constipation, (2) rheumatism, (3) typhoid fever, (4) la grippe, and (5) cerebrospinal meningitis. The first four should not present any serious difficulties, and lumbar puncture would clear up the diagnosis in the last. The presence of brief fever, unilateral Kernig's sign, and flaccid paralysis should render diagnosis obscure for only a day or two.

In addition to the early symptoms named, Flexner has shown that the cerebrospinal fluid obtained by lumbar puncture shows characteristic changes in the acute stages which are of diagnostic value. There may be a slight increase in the amount and pressure of the fluid during the incubation period with progressive increase in the cellular elements, especially the lymphocytes, so that at the height of the disease the fluid previously clear becomes opalescent and undergoes a spontaneous coagulation from excess of protein. As the disease abates it reassumes its normal clearness and non-coagulability. The opalescent fluid is potent in reproducing the disease. while the clear cerebrospinal fluid is not.

As to treatment, there is no question but that it is the duty of all State boards of health to insist upon the immediate reporting of all cases of infantile paralysis. Isolation is the first duty. Elimination is accomplished by broken doses of calomel and soda, followed by one or more doses of castor oil. Enemata are also employed. Hot wet packs are indicated for the skin, and also hot baths. Free drinking of water is encouraged. Cold compresses or ice-caps should be kept on the head; counter-irritation over the lumbar spine and sponging for high fever. Lumbar puncture is often of value, not only for diagnosis but relief of pressure symptoms, especially in bulbar symptoms of respiratory failure, such as cyanosis, shortness of breath, pallor, and anxious facies. Massage should be begun on the subsidence of fever and intense pain, supplemented by electricity, preferably the slowly interrupted faradic current applied over the origin of the weakened muscles, to stimulate not only the circulation and nutrition, but to obtain any slight remaining power of contraction. Antagonistic muscles must be well stretched to prevent contraction and thereby give the weakened muscles a chance to regain their tone. If this is done at the start and persisted in, no contractures should occur which will require tenotomy or myotomy later. Passive movements, assisted active movements, and resisted active movements in turn also help materially.

After the acute stage the child should lie flat on the back with the limbs held straight—not in positions likely to produce contractures. As soon as the acute symptoms subside, if the child cannot bear weight on one or both limbs without producing distortion, proper braces and shoes must be designed and prescribed by the surgeon to meet the requirements of the individual case. The child should be gotten on its feet as soon as possible.

Operative procedures may be divided into tenotomy and myotomy, tendon transplantation, muscle transplantation, tendon shortening or tendon lengthening, arthrodesis, tenodesis, astragalectomy, osteotomy, and nerve anastomosis or grafting. Teno-

tomy and myotomy are of distinct benefit in that they not only restore the normal alignment in the members, but relieve the remaining weakened living muscular fibers in the paretic muscle from overstrain, which in itself is a detriment. As a rule, some mechanical device to prevent recontracture of the overstrong muscle is required. Frequently tenotomy, myotomy, or even osteotomy is required as a preliminary operation to correct distortion some months prior to a secondary operation of tendon or muscle transference, the latter aiming chiefly to restore the balance of power and physiological function.

Tendon transplantation to tendon has not yielded the results at first hoped for. Tendon transplantation to periosteum has been more successful. The important point is that the transplanted tendon or muscle must pull in a straight line and not around a corner. In operating about the ankle the transplanted tendon should be passed under one of the thecal compartments of the annular ligament in line with the new and desired direction of traction.

Taylor thus describes his technique: After the circulation has been shut off by the Esmarch bloodless bandage and tourniquet in the usual manner, four small incisions are made as follows: First, at the insertion of the overactive muscle, which is severed as low down as possible; secondly, over that portion of the same muscle where the muscular fibers first become tendinous—through this wound the freed tendon is withdrawn and the whole covered with a wet, normal salt solution sponge to prevent drying of the tissues; thirdly, at the proposed insertion down to the periosteum; and fourthly, over the annular ligament.

Lange's curved tendon forceps or a hemostat is passed from the annular ligament wound through the subcutaneous fat to the belly of the muscle, where the freed distal end of the tendon is passed and drawn down to the annular ligament. A very small hemostat, after the exact direction desired is determined, is passed under the annular ligament through an appropriate compartment and the end grasped

and drawn through. If the tendon will not reach to the desired insertion, one or more strands of black braided silk are quilted into the end of the tendon, and these are pulled from the bottom of the annular ligament subcutaneously to the desired point of insertion, where they are firmly sewed to the periosteum, which may be incised or not, as the operator deems best and the conditions demand. Lange first pointed out that these silk strands offered a framework for the tendinous tissue to grow about and between. Of course, if the transferred tendon is long enough it may be sewed directly to the periosteum.

Withdrawing the tendon from its sheath—i.e., from "incision one" to "incision two," and ultimately disregarding the old sheath—does not appear to affect the nutrition nor ultimate function of the transferred tendon in the slightest degree. It is possible to imagine a new sheath is regenerated from the subcutaneous and adipose tissues.

The writer has used repeatedly Lange's heavy braided white silk embedded in paraffin, after boiling in 1:5000 bichloride, but finds in practice that the ordinary black No. 5 braided silk, boiled five minutes in the sterilizer, is all that is necessary. The wounds are closed tightly with the subcuticular continuous silver-wire suture and then covered with silver foil, the usual dressing, and plaster cast. The stitches are removed on the tenth day, but the cast is continued six weeks. The tourniquet is not removed until the plaster dressing is completed.

It is needless to say that the foot or part is put up in overcorrection to overcome the deformity and relieve tension on the transplanted tendon. Massage, passive and then active, then resistive movements, together with slowly interrupted faradic stimulation, form important adjuncts to the after-treatment of these cases.

Muscle transplantation is commended by Taylor, particularly in transplanting the biceps into the region of the tibial tubercle rather than attempting to use the sartorius as an extensor of the knee.

Arthrodesis should not be done in children under ten since the bones are too cartilaginous to yield good results and prevent a return of motion. Osteotomy is employed only when malpositions can be corrected by no other means. Functional use, and especially weight-bearing, should be most cautiously employed after all of these procedures, when by means of massage, electricity, baking, passive motions, and the like the parts have been prepared and the muscles strengthened to bear the strain. Six months is a much better limit and will vield much better results than the usual six weeks' interval given after the operation.

Neuroplasty has in Taylor's experience given unsatisfactory results. He believes that with more or less impairment of all the nerves in the paralyzed extremity regeneration from a supposed good nerve by suturing into a paralyzed one is a very slight gain. It is like taxing an already weak and run-down battery with new connections and more work.

The state of the operative treatment today is that the tendon transference direct to a new periosteal insertion or by means of silk lengthening sutures gives the most brilliant results, and in many instances may permit the patient a close approximation to normal physiological use without braces.

## THE MANIPULATIVE TREATMENT OF CONGENITAL DISLOCATION OF THE HIP-JOINT.

SIMPSON (Lancet, Oct. 21, 1911) states that in a large proportion of cases treated by simple manipulation before the age of nine, a true anatomical reduction with full restoration of function is to be expected. In most of the remainder the head of the femur is moved forward from its unstable position on the dorsum ilii to a position either close to and above, or anterior to, the site of the true acetabulum. In this position the head is fixed by strong ligaments and muscles which pass over it, and a stable and mobile articulation is obtained, so rectifying the limp. The new articula-

tion is close to the normal plane of gravity and so eliminates the lordosis.

In a few of the apparent anatomical reductions there is a well-formed acetabulum and a good joint, but the radiographs show that the acetabulum lies a little above its usual position, and is formed chiefly by the ilium. Physical examination of the patient shows that the trochanter is slightly raised and the head of the femur lies at a higher position than usual and can be more readily detected from the groin. The functional result in these cases is exceedingly good, often making a limb practically equal to a normal one. Such cases should be classified as true repositions, in which the aberrant level of the acetabulum is developed to suit the malformed and malplaced head of the femur.

In the class of anterior repositions the head is placed more forward in the groin and held apparently by ligamentous structures, no definite acetabulum being usually formed. The results in these cases are functionally but little inferior to those of true repositions. In a very few cases there is a good false acetabulum formed in this position.

In the few remaining cases the dislocation remains of the dorsal type; a fresh attempt may be made, aided if need be by open operation; even, however, should this course not be taken the condition of the patient is generally improved. In some cases a true false joint is obtained close to, but behind, the true acetabulum, and if this be the case the results may be excellent; possibly this results from rupture of the capsule during treatment. In other cases there is, as a general rule, a more stable limb with less limp and less lordosis than in untreated patients.

The cases recorded were treated at the Royal Southern Hospital between 1901 and 1909: some of the earliest by prolonged extension and abduction in a Thomas frame, others by this method followed by the Lorenz method. Since 1903, when Lorenz gave a demonstration at the hospital, his method of treatment has been followed with but slight modification. In bilateral

cases both limbs are reduced at one operation, unless prolonged manipulation is required by reason of age or other difficulty. The plasters are usually closely molded over a tight-fitting woolen garment, with small pads of wool over the sacrum and iliac spines. If much padding be used the limb may get redisplaced. The patients are allowed to leave hospital within a week after operation, and the parents are told to encourage them to use their limbs. This is facilitated if a strong toy horse or a low chair mounted on wheels be provided, on which they can sit astride and propel themselves while still in plaster. The functional use seems to aid in keeping the joint intact and also in molding and deepening the acetabulum, as Lorenz has pointed out. Every six or eight weeks (longer intervals. three to six months, were used at first) the plaster is reapplied, the limb beingunder an anesthetic, if necessary-brought down to a more normal position and at the same time inverted, care being taken not to allow a redislocation. In from seven to twelve months the fully extended normal position is attained, and after a further six to eight weeks in plaster in this position a Thomas caliper splint is fitted, and the child wears this for about six months longer, to keep the joint firm while it is first used. Massage and passive movement at this time greatly improve the functional result. In applying the new plasters care is taken to overcome the torsion of the limb and so bring the foot into good position and line; by this means some of the advantages of Lovett's inverted position seem to be gained. In none of the present cases. however, has that method been used, though it is now being tried in some cases.

The 33 cases reported include 40 joints—the treatment two to twelve years. A few are still wearing their calipers; others have been free from treatment for five or six years.

There were 21 perfect anatomical reductions, 9 stable anterior repositions, and 10 dorsal dislocations, giving 72 per cent of very good results, and ten per cent of poor results. If five cases which were over nine

years old at the time of reduction be excluded, the results were good in 89 per cent of the cases and fair in 11 per cent.

## THE OPERATIVE TREATMENT OF BADLY UNITED FRACTURES.

LANE (Lancet, Nov. 4, 1911) states that perhaps no operation in surgery makes a greater demand on the skill, resources, and ingenuity of the surgeon than that requisite to restore a badly united, useless bone to its normal form and functions. If an operation is resorted to at the time the injury is sustained the difficulties which the operator has to meet are relatively small, however great the comminution, since the fragments can be fitted accurately together and retained in position by plates and screws, if only the surgeon has enough patience and experience.

The chief obstacle that has to be overcome in many cases is the approximation of the edges of the skin incision and their retention in accurate apposition. This difficulty is experienced more commonly in fractures about or above the ankle-joint, but it may be met with in many fractures where there is much laceration of the soft parts, and especially when some time has been permitted to elapse since the receipt of the injury and the tissues have become inflamed. The earlier the operation is performed after the receipt of the injury the easier it is to carry it out effectually and rapidly. Michel's clips form the most effectual means Lane knows of for retaining the skin edges in accurate and efficient apposition. If accurate apposition is not established the wound may become fouled and the plates may come out. Such an accident means disaster to the patient. At the best it entails delayed union and probably some necrosis. In consequence of the softening of the bone in order to eliminate the screws, non-union of fragments is likely to occur. Again, such non-union is difficult to deal with by operative means, since the organisms which get into the wound lie quiescent for a very long time in and about the bone, and only become active

when a plate and screws are introduced. The length of time these organisms will remain quiescent is remarkable and most disappointing to the surgeon who attempts to deal with a case that has once been fouled.

Surgeons are learning by painful experience that they cannot fix fragments in fractures by foreign bodies with the casual amount of asepsis they find sufficient for abdominal and other operations. Personally Lane believes that for some time the results that will be obtained by operation on simple fractures will at least be as hopelessly unsatisfactory as are those following non-operative treatment. Indeed, some surgeons seem to regard as normal the necessary removal of screws and plates by a process of suppuration, and are inclined to consider the infection as resulting from the presence of organisms in the blood rather than from their own insufficient pre-The trouble will be gradually cautions. eliminated by increased experience.

## EXTENSIVE REMOVAL OF THE INTESTINE.

WHITALL (Annals of Surgery, November, 1911) reports the case of a woman who after a sepsis consequent on labor complained of a severe pain in the left side. Thereafter there was a miscarriage, for which she was curetted. Portions of the placenta which lay immediately over the os and a portion of a macerated four months' fetus were removed. During the course of this the operator pulled down some bowel, the operation then having lasted for two hours. Section was at once performed by Whitall, which showed that the gut which had been pulled into the uterus was entirely torn loose from its mesentery. All the intestine thus deprived was resected, both ends were ligated, the stumps were touched with carbolic acid first, then alcohol, and the ends invaginated with a purse-string suture. A lateral enteroenterostomy was then done. The whole uterus was closed with a mattress suture.

The time of operation was one and a

half hours, making a total of  $3\frac{1}{2}$  hours under ether. The gut removed was measured and found to be 10 feet 8 inches long. Convalescence was uneventful, excepting for phlebitis of the right femoral vein. At the time of the report no nutritional disturbances had developed.

### CIRRHOSIS OF THE STOMACH.

Lyle (Annals of Surgery, November, 1911) states that the term linitis plastica was used by Brinton to designate a special disease of the stomach, benign in nature, characterized pathologically by a diffuse or circumscribed increase in the connective tissue involving chiefly the submucosa, and to a less degree the other layers, giving rise to a marked thickening of the stomach walls with a corresponding diminution in its lumen; clinically by its insidious onset, its slow progressive gastric symptoms, its cachexia, and fatal termination. As to its etiology, it is held that this is a special affection of indefinite nature and cause, or that it is a scirrhous cancer. Two forms are recognized, local and the general. the localized form are found indurated plaques on different portions of the viscus. The more common variety is the one which is found in the pyloric region, forming a plaque of varying extent, often encircling and stenosing the pylorus. In the generalized form the stomach may be normal in size, dilated, or contracted. Contraction is the rule, dilatation the exception. typical case there is found a shrunken, thick-walled tube lying transversely across the epigastrium, suggesting by its size a segment of the large intestine. Often the walls of such a case are so rigid that if the stomach be removed it does not collapse but maintains its original shape. The peculiar dull-gravish color of the peritoneum gives to the surface of the stomach a scarred-looking appearance.

On section the stomach wall is greatly increased in thickness. It may be six to eight times as thick as the normal wall. Despite the infiltration the layers remain distinct.

In the advanced cases all the coats are involved, the most marked involvement being in the submucosa, subserosa, and serosa. According to Brinton, the submucosa is ten to twenty times its normal thickness, the serosa and subserosa seven to ten times, the muscularis five to eight times, and the mucosa two to three times. The mucosa is often normal in appearance.

It is a disease of adult life, more common in men than in women, and a considerable number of cases give a history of cardiac or arterial trouble. The symptoms are first those of indefinite dyspepsia, the formation of a transverse sausage-shaped tumor with a sense of resistance, decrease in free hydrochloric acid, and vomiting which finally becomes incessant. There is complaint of suffocating tightness in the epigastrium; this distressing symptom is partially relieved by vomiting. The stomach cannot be distended and will hold only small quantities of fluid.

The x-ray is often diagnostic, showing a small stomach of the infantile type drawn well up under the ribs. The disease unrelieved by surgical measures is fatal. The average duration is about four years. Diagnosis is rarely made during life. The operation of choice is gastrectomy; if this be impossible, gastroenterostomy; and if this be impracticable, jejunostomy. Cases have been described in which cure has been accomplished by simple exploratory laparotomy. Many of the cases reported are undoubtedly scirrhus.

### A RARE INJURY TO THE PENIS.

Merkens (Deutsche Zeitschrift für Chirurgie, Bd. 111, H. 1-3) reports that while a laborer was standing outside of an open shed door with the penis in the crack of the door for the purpose of urinating his right foot slipped so that the knee struck against the door, closing it, and in this manner catching the penis. He endeavored to free himself by pulling, but succeeded only on opening the door. Upon admission to the hospital the organ was flaccid and 20 centimeters in length. The peripheral

half was swollen and bluish-red. There was complete retention of urine. An incision was made near the root of the organ in order to introduce a catheter. It was found that at the middle of the organ the corpora cavernosa and urethra were completely divided, only the skin holding, the cavity being filled with blood. An effort was made to preserve the peripheral portion, but after five days it had to be amputated on account of gangrene.

## WHEN AND HOW TO OPERATIVELY TREAT VARICOCELE IN THE MALE.

Heineck (Providence Medical Journal, September, 1911) notes that varicocele is commonest on the left side, and with some exceptions is rare at either extreme of life. When idiopathic, varicocele causes a sense of weight and a dragging pain in the scrotum and groin, relieved by lying down and increased by severe bodily strain. At times there are no subjective symptoms at all. The veins collapse when the patient assumes the horizontal posture. The symptomatic type is almost invariably painless, and the veins remain distended when the patient assumes the reclining posture.

The secondary or symptomatic type of varicocele may be caused: (1) By neoplasms of the kidney. In 16 cases of renal tumors, six had determined a symptomatic varicocele. Reclus's patient was an elderly man who presented a right-sided varicocele consecutive to a renal cancer. (2) By occlusion of the left renal or of either spermatic vein by a neoplastic growth, by any form of renal or postperitoneal tumor. (3) By kinking of the spermatic vein due to inflammatory adhesion or renal prolapse.

The explanations of the idiopathic varicocele are based on the length and the vertical course, the dependent position, and the great tortuosity and frequent anastomosis of the spermatic veins, together with the abnormal thinness of their walls, the absence of external support, and the pressure exerted by abdominal strain. The minor frequency of right-sided varicocele is due to the almost constant presence of an efficient valve at the point where the right spermatic vein debouches into the inferior vena cava. Occasionally the valve of the left spermatic vein is absent. Among other causes that may be named as factors predisposing to varicocele or causing its development are those which tend to obstruct the free return of blood through the spermatic veins from the testis, as, for instance, fecal masses in the cecum or in the sigmoid colon, pressing upon the spermatic veins; undue activity of the sexual apparatus; occupation exposing the scrotum to frequent slight traumatisms, or such as requires prolonged standing; heredity, traumatism, previous inflammatory states. The great preponderance of left-sided varicocele is attributed to inferior muscular development of that side of the body, greater length of the vein, exposure to pressure by the loaded sigmoid or colon, rectangular implantation of the left spermatic vein into the left renal vein. The author notes that of twelve cases of primary varicocele of the broad ligament, six occurred upon the left side alone, and in six it was bilateral; in no case was the right side alone involved.

If every case of varicocele is operated on indiscriminately, a fair percentage of patients will suffer permanent bodily harm, locally in the testis and generally in body and mind. Operative intervention is absolutely contraindicated in pseudovaricocele. In symptomatic varicocele the cure is dependent almost entirely upon the surgeon's ability to remove the causative factor. Operation is indicated in all cases of varicocele complicated by inguinal hernia of the same side, in all cases complicated by hydrocele of the same side, in cases giving a history of recurrent attacks of phlebitis and thrombosis or of venous rupture, in those which show a pronounced degree of venous dilatation, and in those which produce neuralgic pain in the testis or pain radiating along the spermatic cord and down the thigh, associated or not with pain in the back and a characteristic dragging sensation; moreover, steady increase in size and progression of symptoms in spite of appropriate

The latter imnon-operative treatment. plies avoidance of constipation, cold ablutions of the parts, sexual hygiene, and the wearing of a well-fitting suspensory. Heineck commends resection of the dilated veins, together with an appropriate area of the pendulous and denuded scrotum. The cord is exposed by the high incision, and care is taken to leave not only the vas but the spermatic artery and the small veins coursing in the sheath of the vas. Before removing the redundant scrotum a double lined cobbler's stitch is applied proximal to the transverse scrotal incision as a hemostatic; moreover, the median septum is through-and-through by two secured Skin apposition is secured by a stitches. subcuticular stitch, no hemostat being required.

### ANGIOMA OF THE MAMMARY GLAND.

CARL (Deutsche Zeitschrift für Chirurgie, Bd. 111, H. 1-3) states that in a 22vear-old girl there was observed a mammary tumor which had been gradually increasing in size since childhood. For the past three years it was painful. No injury had been received so far as the patient knew. The tumor was located in the upper outer portion and in the depths of the left mammary gland. Upon palpation it seemed to be either a fibroadenoma or a cyst. The patient desired operation because of the pain which the condition produced. During the operation it was found that the tumor, which was about the size of a walnut, could not be shelled out. After it was removed it was found to be soft and to a slight extent fluctuating. On being cut into it was found to contain a chocolate-Microscopic investigation brown fluid. showed that the tumor was encapsulated and that the interior was composed largely of blood-vessels with some connective tissue around the larger sized vessels. These findings indicated that the tumor was a congenital hemangioma into which hemorrhage had occurred apparently because of some external influence. Although the operation was done three years ago, there has been no recurrence.

### INJURIES TO THE FIRST TWO CERVI-CAL VERTEBRAE.

Brill (Deutsche Zeitschrift für Chirurgie, Bd. 111, H. 4 to 6) reports three cases of injury to the first two cervical vertebræ, and says that treatment depends upon whether in a given case there is a bilateral rotation luxation, a unilateral rotation luxation, or a flexion luxation; also whether the odontoid process is broken or not. In a case of bilateral rotation luxation one should attempt a reposition, while in the other varieties there is constant danger that through the manipulation in efforts at reduction the fractured odontoid process will press upon and injure the cord. In these varieties of injury it is advised that all unnecessary movements of the head and neck be avoided, and that the parts be fixed in the best possible position so that there are exhibited the least possible evidences of compression.

### EXOSTOSIS OF THE OS CALCIS.

BERRY (Albany Medical Annals, October, 1911) notes that an exostosis of the os calcis can be found in a fair percentage of patients complaining of painful feet; thus Benke found spurs sixteen times out of four hundred and twenty-three radiographs of feet taken on account of various foot troubles. In two hundred and fifty men and women who had not complained of foot trouble he found bilateral spurs in one woman and two men. Probably, however, these were of the character of spurs such as may be found in the Achilles tendon. These spurs are situated in the substance of the tendon, they cause no pain, and are probably the result of osteoarthritic changes. In a study of ninety anatomical specimens Bradford found a number of exostoses of the os calcis. Bauman and other writers state that the condition is most common in men between the ages of twenty and thirty, but it may be frequently found in women. The exostoses may be present at any age. Whites are more affected than negroes. One or both heels may be affected. Chrysospathes believed that they are due to so-called skeletal variations, found in the epiphyseal line, and are caused by a misplacement downward of the epiphysis of the os calcis, which unites at from the fourteenth to the twenty-second year.

Bauman believes that the great majority of exostoses of the os calcis are due to a pathological process which begins as a periostitis. The spurs are formed at the insertion or origin of muscles or tendons. and along their course, or at the epiphyseal line, these being the points of least resistance. What is back of the pathological process is hard to say. The Neisser organism has been found to be present in some of these cases. Baer was one of the first to call attention to the relation between gonorrhea and exostoses of the os calcis. In other cases many different cocci have been found, including the streptococcus, the staphylococcus, etc. Arthritis deformans, influenza, tuberculosis, syphilis, rheumatism, gout, ossification of tendinous tissue, and ossifying periostitis, have all been described as etiological factors in the causation of the spurs. Blenke thinks that an arteriosclerosis is the etiological factor. Paul Reclus thinks that the exostoses are but exaggerations of normal prominences. Mett attributes many cases of painful feet to a mechanical cause, due to a shortening of the gastrocnemius muscle, producing a non-deforming clubfoot. The plantar fascia gives way and periostitis, neuroma, ostitic growths, and bursitis follow as complications.

Jacquet thinks that the spurs develop in muscles subject to strain. Hurtodo attributes the formation of the spurs to hard work in a standing position, and Springer believes them to be frequently traumatic in origin, either by direct injury of the bone or by a pull on the periosteum by muscles.

The symptoms of exostosis of the os calcis are characteristically distinct. The patients complain of a pain in the heel, sometimes burning in character, sometimes described as a boring or sticking sensation. The heel is sensitive to pressure, and in

walking the patient throws his weight forward on the front part of the foot, which in time leads to strain and irritation of the whole foot, and thus may give the appearance of ordinary weakened foot trouble. There may have been a previous history of gonorrhea, influenza, or other infection. There may be a history of long-continued strain or pressure on the feet, or there may be a history of trauma.

Examination shows the heel and plantar fascia tender to pressure, with a point of greatest tenderness directly over the internal tuberosity of the os calcis.

This definite point of greatest tenderness, together with the history and other symptoms, is almost pathognomonic of the condition, but an x-ray picture will absolutely confirm or disapprove the diagnosis.

Rational treatment consists in the operative removal of the exostosis, although in mild cases, if there is any objection to an operation, a specially constructed brace to relieve pressure over the sensitive point may be tried.

Some operators use a linear incision directly over the exostosis, retracting the tissues and removing the growth with rongeur forceps and bone curette. Other operators make a U-shaped incision around the heel and retract the tissues on the under surface of the heel forward. This incision allows a perfect exposure of the point of operation, and the resulting scar is in no danger of being irritated when the patient begins to use the foot. The writer has found no record of recurrence of the trouble after operative treatment, although it has sometimes been necessary to further treat the weakened and strained condition of the foot, caused by faulty attitudes, which were assumed by the patient to relieve his tender heel.

Berry has operated on four patients, using the U-shaped incision and removing the growth by rongeur forceps and bone curette. In each case the exostosis was found to lie directly under the attachment of the plantar fascia to the internal tuberosity, but it was not necessary to cut the attachment of the fascia in removing the

growth. The incision was closed with catgut without drainage, and the patient allowed to bear weight on the foot after two weeks. The results were excellent.

## ENDONASAL OPERATION FOR TUMOR OF THE HYPOPHYSIS.

Hirsch (Berliner klinische Wochenschrift, Jahrgang 48, N. 43) says that tumors of the hypophysis manifest themselves in three forms: (1) As acromegaly, first described by Pierre Marie in 1886, and characterized by increase in size of the hands, feet, nose, tongue, lips, and, as a rule, accompanied by disturbances in the Disturbances in sight sexual functions. may also be present. (2) As degeneratio adiposogenitalio, first described by Fröhlich in 1902, consisting of increase in fatty tissue, usually accompanied by disturbances in the functions of the sexual glands and trophic disturbances, such as falling of the hair, and occasionally by disturbances of sight. (3) As disturbances of sight without any striking general phenomena, resulting at times in blindness. Headache of varying intensity may accompany all three forms, but may be entirely absent. interesting and important to observe that acromegaly is produced only by tumors of the anterior portion of the hypophysis, and, in fact, as Benda has shown, only by adenoma or adenocarcinoma. The degeneratio adiposogenitalio may be produced by tumor in any portion of the hypophysis, and, according to Erdheim, is not caused by the tumor itself but by pressure upon a certain center.

The diagnosis of a tumor of the hypophysis is based upon one or other of the clinical pictures described. An important aid in the diagnosis are the x-rays, as they show any changes in the conformation in the sella turcica, but the x-ray examination is not absolutely diagnostic, as this change in the sella may be brought about by other causes, as hydrocephalus, chronic circumscribed meningitis, or tumors of other portions of the brain. Headache, somnolence, and low temperature frequently occur in

turnor of the hypophysis. The only treatment is surgical. Thyroidin, iodine, and hypophysin have only a temporary influence. The operative methods are divided into the intracranial and the extracranial. The first to carry out the hypophysis operation was Horsley, who adopted the intracranial method by way of the middle cerebral fossa. A second intracranial method, as first used by Krause, is by way of the anterior cerebral fossa.

Schloffer was the first in 1907 to make use of the nasal operation. This method has also been used by von Eiselberg, Hochenegg, and others. By this method there have been operated upon by various surgeons 53 cases with 21 deaths. diately after the first operation by the nasal route the author came to the conclusion that the method of cutting into the nasal bones did not serve any definite purpose in exposing the anterior surface of the sphenoid bone, that the complete removal of the tumor by this method was not accomplished, and that the partial removal of the tumor sufficed to favorably influence the symptoms of the disease. These considerations, together with the fact that surgeons have great difficulty in manipula-

tions in the depth of the wound, led the author to adopt the endonasal route for operation upon hypophyseal tumors. additional advantage of this method is that a portion of the operation can be carried out under local anesthesia. The sphenoidal sinus was opened after first removing the middle turbinate and a portion of the ethmoid was curetted away, which in turn exposed the sella turcica. This was then chiseled away and the dura exposed. On cutting through the dura the hypophyseal tumor became visible. This tumor is usually soft and can be removed through a relatively small opening. The author has operated on 12 cases, 10 of which recovered and two died. All forms of the disease were represented. The deaths in the fatal cases could not have been avoided by any other method of operation. The endonasal method is adapted to all cases in which the tumor protrudes toward the sphenoid sinus. Good results are to be expected if the tumor occupies in greater part the sella turcica or is of a cystic character. When the tumor takes an intracranial direction in its development but very little can be expected of this, as is the case with all other extracranial methods.

### CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

Humanity has lost one of its greatest benefactors by the death of Lord Lister at the ripe age of eighty-four. His health had been failing for some time, and the final collapse was due to extreme old age. At the funeral service held in Westminster Abbey every country in Europe and every branch of science paid tribute to the memory of the man whose life-work constituted the greatest advance surgery has ever made. He first graduated as B.A. in the University of London, but it was in Scotland that most of his epoch-making work was carried out. He first went to Glasgow as Regius

Professor of Surgery, and later on held a similar position in Edinburgh. He gave his great discovery to the world in 1870, a year after he went to Edinburgh. The latter part of his career was passed in London, where he held a surgical professorship at King's College Hospital. His decision to leave Edinburgh was not well received in the Scottish capital, and the first time he entered the operating theater after his plans were made known he was hissed by the students. It would be difficult to recount the many honors which were so deservedly bestowed upon the "Author of Modern Surgery:" he was the first member of his profession to be raised to the peerage, and he was one of the first twelve members of the Order of Merit. Not only

his own countrymen but the people of all nations have shown their gratitude to the man who robbed surgery of its chief terror and lessened the sum of human suffering.

The University of London has never yet possessed a permanent home. It has lodged in the buildings of the Imperial Institute for the past dozen years, but this has never been regarded as a lasting arrangement. The whole matter has been thoroughly dealt with in the fourth Report of the Royal Commission on University Education in London. The Commissioners state that the inception of any scheme for the reorganization of the University would be seriously delayed after parliamentary sanction had been gained unless steps had previously been taken to provide for the University as reconstituted a site and buildings more convenient and adequate than those occupied at present. The Commissioners consider that it is a matter of national importance that the University of London should be recognized and accepted as a great public institution, and that it is both fitting and right that such an institution should have for its headquarters permanent buildings appropriate to its dignity and importance and situated conveniently for the work it has to do. As to finance, it is pointed out that great universities are not selfsupporting, as the fees of students are quite inadequate to provide for instruction in a wide range of subjects on an advanced plane and at the same time provide facilities for systematic research. The University of London already receives contributions from local and Imperial funds, and the government has always been responsible for its housing. But for further development the University will have to depend largely on the endowments of private benefactors, and if such can be obtained the Commissioners foresee almost unlimited possibilities for the University of London in the future.

A serious attempt to reform the criminal classes has been inaugurated by the opening of a new prison or "House of Detention." Ordinary convicts will not be sent to this prison; it will be reserved for those

persons whom it is considered desirable to keep permanently under lock and key, and every inmate must have been convicted at least four times. In short, the habitual criminal is to be reformed by kindness. The professional criminal will first serve his time of penal servitude for the specific offense for which he was convicted, and then will pass into the House of Detention for periods varying from five to ten years. Here the whole idea will be to induce the men to behave themselves. Their cells will be comfortable, they will be allowed to converse with each other, and they will receive payment for the work that they do. The best behaved may even be permitted an occasional pipe, and they will be allowed to have plenty of books. Prisoners may be released when they seem to have really turned over a new leaf. Whether this system of treatment will be successful in inducing the veteran in crime to become a law-abiding citizen remains to be proved; possibly it may be so successful that the inmates of this latest "hotel" may be reluctant to leave their "sheltered life" to face again the battle of life.

Reports have reached this country that the scientists of the Rockefeller Institute have discovered a serum for the cure of pneumonia. Considering what an enormous number of deaths pneumonia is responsible for in this country, such a discovery, if it stands the test of time, ought to make an appreciable difference to the death-rate, especially during the winter months. We shall await with interest further reports as to the efficacy of the new serum.

No drinking during business hours was the key-note of a conference lately held at the Mansion House in which many well-known doctors took part. The habit of "treating" customers which leads to drinking during the hours of business was held to be a matter of great concern, especially in its effect upon the many thousands of young men engaged in city life. It was urged that the rule should be "total abstinence during business."

The important crisis in the affairs of medical practitioners in relation to the Na-

tional Insurance Bill has now been reached. For the past three days delegates sent up by the various divisions of the British Medical Association all over the country have been sitting in conference in order to decide finally what the attitude of the profession in general toward the Act shall be. The first thing to decide was whether the Association should continue to negotiate with the Insurance Commissioners, or whether there should be an abrupt refusal to have anything to do with the Act in its present form. There was a very keen discussion on this point, and it was finally decided that negotiations should not be broken off, but that members should be nominated to serve on the National Advisory Committee, and a sickness insurance committee was also appointed to deal with all matters affecting the profession in relation to national insurance. Other resolutions reiterated the determination of the members to insist upon their "minimum" demands as embodied in their famous "six-point programme," which included the fixing of an income limit for the insured, adequate capitation fees, and freedom from friendly society control. The Council of the Association was directed to inform the Insurance Commissioners, in plain and unmistakable language, that unless the minimum demands of the profession were embodied in the regulations in such a manner as to be effectual and permanent, it was the intention of the British Medical Association to call upon its members and all other medical practitioners to decline to undertake any medical duties which might be assigned to them under the A seventh point was added to the original programme—that the power of considering all complaints against medical men be vested in the local medical committee, with the right of appeal to a central medical board to be appointed for that purpose. This point will insure that the discipline of medical officers under the Act will be placed unreservedly in the hands of the profession, and thus preserve the sacred right of all professions—to be judged exclusively by members of their own body. The reasonable attitude which has been

finally taken up by the conference will be certain to command the respect and sympathy of the general public.

### PARIS LETTER.

BY M. A. C. TUCKER, M.D.

One of the most illustrious French surgeons, Professor Lannelongue, has just passed away, carrying to his grave the unanimous regrets of his countrymen. fervent adept of Pasteur theories, he was one of the first to understand the immense importance of laboratory researches for medical and surgical purposes, foreseeing the predominating rôle that bacteriology, with its corollaries such as antisepsis and asepsis, would play on the surgical stage. Early in his career Dr. Lannelongue concentrated his studies upon infantile surgery without losing sight of surgical evolution in general. The lamented professor particularly distinguished himself by his study of osteomyelitis and by his large contributions to the treatment of surgical tuberculosis—coxalgia, more especially. amongst the most eminent French surgical notables of the day have been trained at his school and have likewise contributed to generalize the ideas which have created the unprecedented development and progress of contemporary surgical science, art, and practice.

When a medical attendant has prescribed a treatment with results not in accordance with expectations the medical case often degenerates into a judicial one, as patients are wont to prove before tribunal and courts that it is absolutely and entirely the fault of the man of the art; and it is upon this basis that a victim of burns by Roentgen or x-rays sued a doctor for damages, but the case was dismissed by the judge, who rendered the following decision:

"Considering a priori it must be admitted as a principle that it is most inadvisable for a court of justice to expose itself to the charge of stopping particularly, in urgent and difficult cases, the so often beneficial initiative of the doctor, for such interven-

tion would certainly tend to create a serious obstacle to the development of medical science on its way of continual progress, the judges could not be justified in accepting proceedings against doctors for facts arising out of the normal and legitimate exercise of their profession, unless these facts arise, in some measure, from a fault 'extra-professional' or from a fault punishable in common law and imputable to any man, independently of the treatment prescribed and directed; moreover, charges of this nature should not be maintained unless they constitute in themselves a grave fault of diagnosis, of treatment, or of operation inconsistent with the actual state of medical science, or unless such facts are the consequence of ignorance or neglect that could not be excusable in a person invested with the title of doctor, with the knowledge, the conscience, and the good sense required for the proper exercise of his skill."

Here is another action in which the ungratefulness of a certain class of patients is vividly illustrated. The case sounds much more like an attempt at blackmail than anything else. A military doctor received one day in his hospital ward a young trooper who manifested serious signs of pulmonary tuberculosis. The patient was naturally treated with all desirable care. At the next meeting of the local military medical commission it was unanimously decided that the young fellow be sent home with a full certificate of freedom. The latter accordingly was liberated the next morning, but returned after two days in the company of his father, a rich manufacturer of the district, who declared himself greatly moved by the great kindness, the anxious, enlightened and diligent attention and care bestowed upon his boy, for all of which he was very thankful; and he—the father—asked what, in the opinion of the major, would be the proper course to follow in order to obtain a radical and complete cure. The doctor gave the traditional triad—openair cure, rest, overfeeding, etc. The pater decided immediately to send his heir to his country seat with a full array of servants and attendants, and when departing he thanked again our confrère, and taking his hands with great effusion said: "Doctor, you will soon learn that you have not dealt with an ungrateful man."

Just one year later our medical officer, who had done all that could have been expected of him, and even more—for nothing compelled him to give so freely his advice for the benefit of a liberated soldier, a civilian—received from the French War Office the following message: "Dear Sir: I have the honor to inform you that Mr. X., whose son had been medically treated by you and who was subsequently advised by yourself about the course to be adopted for the recuperation of his health, has sent in a statement of claim, stating that his son is now completely cured and that the recovery is a clear proof of your error of judgment and of diagnosis, and he consequently sues you for 5000 francs damages as a compensation for the unnecessary expenses incurred by plaintiff and occasioned by your unfounded opinions,"

You may well realize the stupefaction of our medical brother. It is hardly necessary to state that he had not the slightest trouble to prove, by documents, that his science had never been at fault for one instant, and that "the grateful father" was laughed out of court with full costs. Supposing that he had not been grateful, goodness knows what would have happened!



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### ORIGINAL COMMUNICATIONS.

### THE SURGERY OF ANTERIOR POLIOMYELITIS.1

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In a symposium embracing the consideration of only the acute stages of anterior poliomyelitis, there would appear to be no place for the consideration of the surgical aspect. The great advances that have been made in the surgery of infantile paralysis have dealt with the resulting deformities and loss of function, but have had no place in the prevention or amelioration of the affection. Most writers on the subject of surgery in infantile paralysis urge deferring operative procedures until at least one year has elapsed from the time of onset. This intervening period is, however, the most important time in the whole history of the affection. It is during this period that prophylaxis can play such an important rôle in the prevention of the ensuing deformities of contracture, of dislocation, of atrophy from disuse, etc. It is therefore important that in the beginning the surgical aspect should be kept in view in intimate connection with the distinctly medical side of the subject.

The various conditions following anterior poliomyelitis that have been benefited by modern surgical procedure are tendon contractures, relaxation of ligaments, flail joints, dislocations, changes in the shapes of bones, deformities due to incoördination of muscles, and atrophies of muscles from excessive use as well as from disuse.

Prophylaxis must occupy an important position in preventing the occurrence of

<sup>1</sup>Read before the Lehigh Valley Medical Association, January, 1910. many of the above conditions, or at least in preventing their severest manifestations.

In many patients, years after the onset, it is impossible to determine whether muscles are atrophied from disuse or were originally affected by the paralysis, and a brief consideration of the mechanism will usually explain this apparently difficult problem. Assuming for the sake of illustration that the triceps muscle is the seat of the original paralysis and being therefore inactive, leaves its opponent, the biceps humerus, without active restraint. The function of the elbow becomes more and more impaired, inasmuch as the only active muscle controlling it, the biceps, is not resisted, and there very soon follows a gradually increasing atrophy from disuse, affecting the said biceps muscle. becomes a flail joint, and without a careful microscopic examination of the constituent parts of the two muscles, namely, the biceps and triceps, there appears to be no way of determining which was originally lost by paralysis and which was lost by disuse. The ultimate effect is the same in both cases. In the early history of the affection in an individual case, in which the above conditions were present, care and attention would be given to prevent the occurrence of the atrophy from disuse by recourse to remedial measures peculiarly adapted to the requirements of the case. Thus prophylaxis plays a very large part in the prevention of the serious forms of deformities that frequently occur.

Similar conditions can be used to explain the occurrence of subsequent contractures. Contractures invariably take place with the joints flexed because all joints are in a condition of greater or less degree of flexion the greater part of the time. occupy a position of full extension for a very brief period, whether the patient is active, as for instance in the daytime, or lying relaxed in sleep. So great is this contracture at times that not infrequently dislocations, either complete or incomplete, are frequent subsequent results. beginning the contractures are of a very trivial character, and depend entirely upon the position of the affected joint when not in use.

What has been stated above with reference to the elbow-joint applies equally as well to all other joints. Contractures of the hip are invariably contractures of the tensor vaginæ femoris, the sartorius, or anterior muscles. Contractures of the knee are invariably those of the hamstring tendons, and never those of the anterior groups of muscles. It will be apparent therefore that prophylaxis has a very large field during the first few months of the first year after the onset of the affection of anterior poliomyelitis.

The various investigating committees have reported that about fifty per cent of cases of anterior poliomyelitis have more or less severe pain, sometimes excruciating. Meningitis is emphasized as a feature of the morbid process, and by inference it might be considered the sole cause of pain.

T. A. Williams¹ concisely states that there are two distinct kinds of pain resulting from poliomyelitis. The first is due to meningitis and not within the scope of this paper. The second is due to mechanical and secondarily nutritional effects following destruction or interference with the neurons governing the muscles. It closely resembles the pain resulting in healthy patients from prolonged cramped position or overexertion, and is caused by the sagging of joints and inactive muscles. In proof of this it is only necessary to refer to the relief from pain that is afforded by

efficient methods of rest and freedom from the weight of the suspended limb.

F. Lange<sup>2</sup> emphasizes the great importance of the proper application of a plaster-of-Paris bed or jacket which gives support to the entire body. This method was first suggested by Oppenheim, and since has been extensively employed.

Lange and others believe that experience with acute inflammations indicates that entire and complete rest of the affected parts is the most important requirement. Such methods frequently cause the pains to subside. They prevent the excessive use of the paralyzed muscles. They prevent the affected limb from sagging at the joints.

It is possible that the paralyzed muscles will recover under favorable circumstances, thereby greatly diminishing the ultimate disability.

A patient efficiently supported by a properly constructed plaster-of-Paris cast cannot so conveniently be subjected to the unnecessarily severe form of deep massage, but can receive the superficial light friction that is more appropriate.

The soft and tender muscles of a child are rendered more susceptible to injury when they are paralyzed, and therefore most careful and delicate handling should be the rule. Deep, forcible massage of the kind most frequently applied is injurious and should not be permitted.

Electricity in some of its best forms will aid in stimulating muscles, and conversely, overstimulation must be injurious.

The prevention of contractions often necessitates mechanical apparatus, but the greatest care is demanded to avoid injury in the attempt to benefit the patient.

Experience has demonstrated that normal muscles are injured by the pressure of orthopedic apparatus, and the injury in paralyzed muscles is often unjustifiable. Rigid braces that aim at correction of contracture or deformity should be limited in length of time of application as well as in the weight. Very frequently it is desirable to confine the use of mechanical apparatus to the sleeping hours to avoid the strain of carrying additional weights.

As a rule, deformities of the arm are less corrigible than the subsequent deformities that occur in the leg, the explanation of which can be readily found in the greater ability to dispense with the use of an arm, substituting therefore excessive use of the other arm. In the leg more or less functional use is made, stimulating therefore the muscles to use, and thereby tending to avoid the atrophies from disuse, as well as tending to avoid the contractures that often follow.

Extreme care should always be employed in the use of any form of a brace or stiff-ening appliance to avoid disuse, and as well to avoid throwing excessive function upon any weakened muscular structure. Apparatus, therefore, should have for its object the development of muscles with the least possible hindrance, to encourage weight-bearing and the function connected therewith.

Until a very recent period the surgical consideration of infantile paralysis was very largely, if not entirely, confined to subcutaneous tenotomies of contracted muscles in order to obtain fuller extension, thus facilitating weight-bearing by means of mechanical supports. While a great deal was accomplished in facilitating locomotion, the division of shortened muscles was rarely ever followed by restored function of the affected parts. The inactivity of the circulation in infantile paralysis rarely tended to produce good, strong bond of union of the divided tendons, and flail joints many times resulted that required great mechanical ingenuity in the construction of appliances to give them stability.

There then followed a long period of time in which great attention was given by operators all over the world to overcome the contractures without the loss of repair that has already been referred to. Most ingenious operative methods have been devised in the form of tendon splicing so as to secure perfect contact of at least a part of the divided tendon that required elongation. Here, again, the primary object was to obtain lengthening of the tendon to permit extension of the affected parts, thereby facilitating ambulatory apparatus.

One of the first methods of elongating other than by simple division was suggested by Dr. J. Neely Rhoads, of Philadelphia. It is done subcutaneously, and a knife for the purpose was devised by Dr. O. H. Allis, of Philadelphia. This knife has a long shank and a short blade with a curved cutting edge. The method of procedure is as follows: After puncturing the skin above the upper point of division, introduce the knife-blade flatly between the skin and the tendon, turn it, and cut through the middle of the tendon, longitudinally, for the required distance, then cut out at one side and withdraw the knife. Introduce it at the lower end of the longitudinal incision and cut off the opposite half of the tendon. Elongation can thus be accomplished and the ends be allowed to overlap for tendinous union. No sutures are employed, as the entire procedure is subcutaneous. Dr. Rhoads also suggested the use of this method in lengthening nerves and bones. Where but a small amount of lengthening is desired, he suggested cutting half through the tendon at different levels and from opposite sides, leaving some longitudinal fibers to slip on each other, thus gaining slight elongation.

Where lengthening of the tendon is desired, and splicing and tenotomy are inadvisable, Dr. F. Lange<sup>4</sup> suggests cutting the tendinous portion in the fleshy part of the muscle. The muscular fibers are easily stretched the desired length, and there is no risk of non-union of the tendon.

Mr. Anderson,<sup>5</sup> of London, on October 18, 1889, devised and practiced a method of tendon elongation, which, though the tendon is incised similarly, differs from and excels Dr. Rhoads's method in being done openly and with sutures through the severed ends. It also obtains a positive and definite increase in length, and perfect apposition of the severed ends.

Dr. W. W. Keen, of Philadelphia, performed independently the same operation on November 29, 1890 (thirteen months after Mr. Anderson), and published it (four and a half months before Mr. Anderson's paper appeared) as an original method of obtaining positive and definite lengthen-

ing of a tendon; but upon learning of Mr. Anderson's priority in performing it, he resigned all claims of originality in favor of the former.

After the publication of this method of elongation I suggested its use in shortening a tendon, and I have performed it with marked success, the first occasion being on June 10, 1891.<sup>7</sup> The incisions are made in the same manner, sufficient tendon is removed to obtain the desired shortening, then a corresponding amount is removed for symmetry, and the ends are stitched.

Another method which has been adapted to lengthening or shortening is that of Mr. Willetts, of London. After the tendon has been exposed, it is cut diagonally from without inward and from below upward, the ends are allowed to slip past each other for the required distance, and are there held by two sutures on each side; if for shortening, the necessary amount is removed from one end and the oblique surfaces are brought together.

Of the methods of suturing divided tendons, that of Esmarch<sup>9</sup> is the simplest. It consists in overlapping the ends and holding them by means of a suture passed through and through. Another is end-to-end anastomosis, as done by LeFort,<sup>10</sup> in which a suture is passed into the side of one end, out in front, into the front again, and out at the other side; then each end of the suture is passed into the corresponding side of the opposite end and out in front and there tied. This secures the tendon ends in the desired position, and prevents separation by muscular contraction, which frequently follows tenotomy.

Wolfler's method<sup>11</sup> differs from the above in the sutures being passed in and out several times, partially encircling each end of the tendon, and in its being tied at the side. The same end is accomplished as above, but the method illustrates the ingenuity of surgeons in attempting to obtain the same results.

Another method is that of LeDentu.<sup>12</sup> One suture, passed through each end, is tied at the side, and two supplementary sutures, one on each side of tendon, are introduced nearer the ends and at right angles

to the first suture. These three methods, all very much alike, were originated about the same time by three different men, each ignorant of the other's plans.

About a year and a half after these were published, Dr. Trnka18 recorded a method which had been devised by him in 1887. It differs from those mentioned in the manner of inserting the suture. It is passed transversely through the anterior half of one end of the tendon and back through the posterior half, then in the same manner through the other end, loops being left on that side on which the suture is passed The free directly back through the tendon. ends of the suture are tied, and the loops are connected by a separate suture, and when drawn taut equal tension is made on each side of the tendon. A similar method of joining the loops does away with the extra suture. After the suture is passed through the one end, a long loop being left, it is passed through one side of the other end, through the first loop, and then back through the other side and tied. method secures firm apposition of the ends and aids very much in obtaining strong union.. A method of lengthening has also been devised by him in which the upper end of the tendon is split from within threeeighths of an inch of the end upward the required distance, then cut out to one side, and this half turned downward to be joined to the lower end. In the same manner as the suture was introduced in the other, a suture is passed through the end which was split, the half turned downward being included in the loop, then through the other end, including the connecting half, and then tied. The half which was split out and turned over acts as the extra suture.

Some time ago I devised (and performed for the first time in September, 1893) a method which has the advantage over Trnka's of there being more tendinous tissue between the two severed ends, and consequently a stronger tendon after union. It is done by splitting both parts of the tendon equally for the required distance from within three-quarters of an inch of the end and cutting out to one side at the other end of the incision and at opposite sides of the

tendon. Now turn over these cut halves and pass a suture through each one, and tie each separately.

Czerny<sup>14</sup> provided for strength by utilizing part of the tendon for the lengthening process, transplanting the end of the part cut from the side of one tendon into the other free end, so that tendinous structure is secured through the entire course. This method can be illustrated by placing one finger of one hand between two fingers of the other, the exact relation of the two tendon ends. They are held in place by through-and-through suturing.

Schwartz<sup>18</sup> devised a method of anastomosis where juncture of the two ends, for some reason, cannot be effected. He divides a neighboring tendon longitudinally, as in the extensors of the fingers, and cuts off one-half at the distal end of the incision, then attaches the distal end of the severed tendon to this freed end of the half of the neighboring tendon, thus securing the movement of the two parts or members by means of the one muscular action.

The Tillaux and Duplay method<sup>16</sup> is a very ingenious one, accomplishing the same purpose as that of Schwartz. A longitudinal incision is made through a contiguous tendon, and the distal end of the severed tendon inserted in it and sutured in position. Two members may thus be operated by one muscle, or two muscles, if the proximal end be inserted, may operate one member.

These operations represent the principal ones for tendon splicing, lengthening, or shortening by division of the tendon in its entirety. Several complicated methods have been devised for the purpose of utilizing tendinous tissue in lengthening and yet not entirely dividing the tendon at any point. The originator of either plan is unknown to me. The first one is the more complicated of the two which I shall mention, and is done as follows: Divide the breadth of the tendon into fifths. From each side and at the same level cut transversely through twofifths to the middle fifth, then longitudinally for the required distance. Then enter the knife at a point one-half inch below the transverse cut on one side, and in the line separating the first and second fifths cut longitudinally a distance equal to the first longitudinal incision, turn the knife and sever the middle three-fifths, turn it again and cut upward for the same distance as the parallel incisions. The last incision will embrace the first two between the longitudinal cuts. The amount of elongation is graduated by the length of the longitudinal incisions. The disadvantages of the method are that the tendon must be a very broad one, and that a great degree of skill on the part of the operator is required to perform it, even in a large structure.

The other method is adapted to the same purpose, but is less complicated than the one just explained. The breadth of the tendon is divided into thirds, and longitudinal incisions of equal lengths, but at different levels, the right being the higher, are made between them. Then cut transversely through the left two-thirds to the upper end of the right longitudinal incision, and through the right two-thirds to the lower end of the left longitudinal incision. Draw on the tendon: it is elongated, and is composed of tendinous structure through the entire length. In both these methods reënforcement by sutures of that part of the tendon where the ends remain intact would be necessary. Both show considerable ingenuity on the part of the originator, yet lack that simplicity which is necessary for practical application.

The most decided advances in the surgery of infantile paralysis have been in the line of transplantation of tendons, and it has been found that strong active muscles can be made to change their function so as to perform the function of reverse muscles in their new relationships. While the method of tendon transplantation has accomplished a great deal, it has at times been carried to an extreme because of the absence of available material in a given case. Where a powerful muscle like the gastrocnemius is lost, it is extremely difficult to find any substitute for it without materially altering the mechanical action of the foot, and the attempt to transplant any of the muscles of the leg so as to perform the function of the gastrocnemius will result in such tremendous strain upon this transplanted muscle as to produce atrophies from excessive use which very closely resemble atrophies from disuse.

In the earlier attempts at tendon transplantation, the tendon of an active muscle was transplanted into the tendon of an inactive muscle with a desire to transfer the function of the active muscle into the inactive muscle. The resulting conditions were far from satisfactory, because of the lack of vitality and the tendency to stretch of the tendon of the disused or paralyzed muscle. Very many failures occurred, notwithstanding the most carefully elaborated technique and very proper selection of material for transplantation.

Most writers give the credit of originating tendon transplantation to Nicoladoni, and state that in 1882 he attached the peronei to the tendo Achillis in a case of paralytic calcaneus. Arthur W. Elting,<sup>17</sup> in an extensive historic review of tendon transplantation, states that Duplay<sup>18</sup> in 1876 transplanted tendons in a case of loss of function of the arm due to traumatism.

In 1892 Parrish, 19 of New York, reported a case of clubfoot treated by this method and was the first one in America to transplant tendons. The same year Drobnik 20 used the same procedure and proposed periosteal insertion of transplanted tendons.

In 1894 Winkelman grafted a strip of the tendo Achillis upon the peronei, and he was the first to publish and analyze a series of cases, sixteen in all.

Since 1894 Goldthwait, of Boston, and other orthopedic surgeons, have perfected the methods and elaborated the details of the after-treatment. So little had been written on the subject prior to 1896 that Goldthwait's<sup>21</sup> study was believed by him to have been on original lines.

Careful research into the literature revealed the priority of Nicoladoni's operation, but he was, apparently, not aware of the operation done by Duplay six years before Nicoladoni reported his case.

F. S. Eve<sup>22</sup> in 1898 reported 274 of these operations, and Vulpius<sup>28</sup> in 1899 gave his experience in 160 cases. Lange<sup>24</sup> in 1902 introduced artificial tendons of silk between

the sound and the paralyzed tendon, following the example of Gluck,<sup>25</sup> who in 1892 had used bundles of silkworm-gut to bridge over the gap after division of tendons in injuries.

Kummell<sup>26</sup> in 1896 had found that strands of silkworm-gut subsequently became converted into fibrous tissue.

The method of transplantation of tendons is applicable to those cases in which function is faulty because of ill-directed voluntary movements, and it aims to restore the balance of power as far as possible. It is applicable in traumatic loss of function of muscles and tendons, spastic paraplegia, infantile paralysis, and congenital deformities. I have obtained results from tendon transplantation in flatfoot that were never considered possible in aggravated cases.<sup>27</sup>

Prof. Dr. E. Muller<sup>28</sup> employed the method of tendon transplantation and arthrodesis in paralytic valgus. The distal insertion of the extensor proprius hallucis was cut and carried through a vertical hole which had previously been drilled through the scaphoid, and the end of the tendon was sutured to the under surface of the scaphoid. The arthrodesis was performed on the astragalo-scaphoid articulation.

It is evident that the affected joint cannot be restored to full normal function when there is definite loss of muscle force by paralysis. The removal of deformity and ill-balanced muscle function and securing proper relative balance of voluntary action tend greatly to improvement in the general action and function of the parts involved.

Very often muscles that were previously deemed absolutely lost, in which the electromuscular evidence of degeneration was perceptible, subsequently demonstrated the resumption of function. One of the greatest benefits that may be obtained is the freedom from further necessity to use braces or forms of mechanical support.

There are anatomic and surgical limitations to the transplantation of tendons, but many of these limitations have been overcome, at least in part, and now it seems perfectly possible to reverse absolutely the normal action of muscles advantageously. Thus, flexor muscles become extensors; pronators become supinators.

It requires care to regulate and adjust to a nicety the amount of power to be transferred. Often previously undeveloped muscles become revivified, and their functions, added to the transferred function, carry a preponderance of power; thus the balance is again disturbed, but in the opposite direction from that formerly existing.

The best results have, I believe, been obtained in cases of anterior poliomyelitis in which at least one year has elapsed since the onset. This period is usually sufficient to have demonstrated the muscles that are lost or impaired as well as those that are fully capable. Those muscles possessing full function sometimes become exaggerated in their action, because they lack the resistance afforded by their opponent groups, and there follow the disturbed balance of power, the faulty postures of the extremities, for which relief is sought.

The question has many times arisen as to the effect upon the motor centers of the brain by the alteration of function of muscles produced by tendon transplantation. A person desiring a certain mechanical movement obtains that motion in normal conditions in a definite manner. The brain sends out an impulse to the muscles involved, and the resulting action depends upon the origin and insertion of the muscles. The action in normal conditions depends also upon the correlation of the muscular forces, the resisting groups counteracting the acting muscles, and thus the proper balance of power is exerted.

In the abnormalities of infantile paralysis there is more or less disturbance of the relation between the various groups of muscles, and this disturbance increases with the further degeneration of the paralyzed muscles and the atrophy from disuse of the others, while the unaffected groups assume undue proportions, because of the absence of normal resistance.

In infantile paralysis patients soon acquire an intuitive method of brain control by limiting the force to the exigencies and an adaptation to the demands of the parts

involved. As a matter of experience the effect of the brain on the transplanted muscles or the effect on the brain may be laid aside, because, surgically, the object sought is to transfer the insertion of a muscle to a suitable point for correct balance of power, and this is accomplished without evidence of having disturbed the brain. Tubby and Jones<sup>29</sup> in their monograph observe: "Are we to regard nerve impulses as of specific nature—that is, extension impulses or flexor impulses; or are we to regard them merely as being forms of force sent down to a muscle, and the direction of the force produced as being in no way special to the nature of the nerve impulse? We incline to the latter alternative, and we take it that what happens in the brain in these cases is not any subtle change from flexor impulse to an extensor nerve impulse, after transplanting a flexor and making an extensor of it, but a change of perception on the part of the sensory centers, so far as the position of the limb is concerned; that is, the patient must learn that when a certain muscle is contracted. the limb is not in a state of flexion as heretofore, but in one of extension or supination instead of pronation."

Each case presents individual characteristics and must be studied with care to determine first the condition of the various muscles normally in control of the parts involved. It is necessary to predetermine a definite procedure, and therefore full information must be obtained as a preliminary measure.

All contractures of fascia, tendons, and any other structures must be removed and sufficient time allowed for the further development of the muscles that may have been influenced by the existence of these contractures.

It is generally desirable to select the reënforcing tendons from muscles whose normal action corresponds as nearly as possible with those to be reënforced. It is practicable, however, to take more or less remote tendons, remote in situation as well as remote in action. Not infrequently the conditions present leave no choice in the selection, and yet the resulting improve-

ment is often gratifying to the patient and to the surgeon.

It is always important to keep well in view the thoroughly established fact that muscles that previously gave evidence of paralysis have exhibited signs of returning strength after transplantation. This has also been observed many times after the removal of contractures about a joint, and indicates the necessity of knowledge on this point in avoiding overcorrection. has many times seen muscles that were decidedly yellow at the time of operation, and were therefore inactive from apparent degeneration, subsequently assume almost full normal function after rearranging the insertion.

The operation of tendon transplantation is rarely applicable to cases in which all of the muscles about a part are paralyzed. There being no active muscles, very little if anything is to be gained by transference of tendons, but rather the method will be brought into unjust disrepute by the failures that should have been avoided. The reënforcing tendon should be taken to the paralyzed tendon or to the periosteal insertion in the most direct manner possible, so that its full force may be obtained without the loss of rounding corners.

In selecting an opponent of a muscle that is paralyzed, it is important to remember that the reënforced muscle is not only gaining power from the opponent, but it is losing its resistance from the normal antagonism.

The parts affected by the transplantation should be so placed at the time of suturing the tendon in its new position that tension shall not be present during repair, but upon the restoration to normal posture of usefulness such tension on the tendon shall result that will approach that normally existing. A properly relaxed tendon at the time of the operation will be efficient or inefficient in proportion to the presence or absence of proper tension when the extremity is in proper position for function.

The treatment after operation is of importance equal to that of the operation. The affected parts must be held in plaster of Paris for a month or more in such posi-

tion as may be necessary to secure proper union of the tendon without tension thereon. When the rigid appliance is removed, the patient should be carefully trained in the voluntary use of the parts without weight-bearing. This can often be supplemented by having the patient use the corresponding extremity, acting in unison with the one operated on.

As the transplanted muscle gradually assumes voluntary motion and as proper control over the affected parts improves, increasing latitude of function may be permitted and encouraged until in the judgment of the surgeon full function may be allowed. It is not desirable to resort to braces of any kind during the stage of development, because their use will more or less alter the action of the muscles and thereby modify the remedial physical culture procedures.

Many of the earlier failures were due in part to overenthusiasm as to the curability by recourse to transplantation alone, and now these failures are often avoided by associating arthrodesis as a supplemental measure. Arthrodesis, when properly used, aids very materially in preventing undue strain upon incapable muscles, and by preventing this strain enables the muscles properly to exert their full force in producing the necessary balance of power to the extremity involved.

Arthrodesis is the term that is used to indicate the intentional production of ankylosis of one or more non-pathological joints to overcome or correct deformity. It is generally accomplished by cutting out the articular surfaces of one or both of the bones composing a joint, or by removing a wedge of bone.

The accepted methods of inserting transplanted tendons are conveniently grouped under four headings: (1) Dividing a tendon of a healthy muscle and suturing its central portion to a paralyzed tendon. (2) Dividing the tendon of a paralyzed muscle and attaching its peripheral portion to a healthy tendon is called ascending transplantation by Vulpius, so and by Hoffa the passive method. (3) Splitting the tendon of a healthy muscle and transplanting only a

part into the tendon of a paralyzed muscle. Vulpius calls this the descending method. and Hoffa calls it the active method. suturing tendons together the quilt suture of Goldthwait has many advantages. Attaching the tendons of transplanted active muscles directly to the periosteum was proposed by Drobnik and advocated by Lange. The last method is greatly to be preferred when possible, as the resulting bond of union secured by this means is much stronger and more durable. When the tendon to be transplanted is too short for periosteal attachment Lange's method after Gluck of using strands of silk to elongate the tendon may be advantageously emploved.

It is self-evident that critical asepsis and not antisepsis is demanded in tendon sur-The skin incision advocated by Vulpius is a very long one to facilitate inspection of the muscles and form an estimate of their degeneration. Eve advises against unnecessarily long incisions in the skin because of the interference with the venous circulation and subsequent edema. My own experience is that the skin incision should only be long enough to enable the surgeon to transplant the tendons successfully. In case arthrodesis is to be done, or when one incision is not sufficient. I prefer making several rather than to attempt to accomplish everything through one opening.

Tendon transplantation, alone or combined with arthrodesis or other bone operations, offers prospects of materially adding to the comfort, convenience, and usefulness of a very large class of patients otherwise more or less dependent upon forms of mechanical apparatus.

. The frequently observed improvement in the action of muscles that previous to operation gave evidence of being paralyzed or atrophied from disuse shows the capabilities of restoration when the offending abnormalities have been removed. It is impossible to estimate properly what the future development in a given case will be. The coöperative, intelligent care of the patient must be depended upon in securing the best permanent results.

Muscles cannot develop when they are

used to excess or are under constant strain. The atrophy from disuse, whether caused by tension or relaxation, often presents all of the appearances of paralysis.

The avoidance of overstrain upon incapable muscles is often demanded so that the minimum muscle force may accomplish the maximum of action.

The after-treatment is fully as important as the surgical procedure, and must be given prolonged consideration in order to accomplish the best ultimate results.

Arthrodesis alone possesses advantages in cases incapable of benefit from tendon transplantation.

Various forms of osteotomy, osteoclasis, and other bone operations are available for the removal of deformity and for the prevention of undue strain upon the soft parts around a joint.

It is apropos to quote the following from the closing remarks of Dr. Albert Hoffa at the time he read a paper before the American Orthopedic Association: The results in man have clearly proved that results are to be obtained. . . . The result will depend upon the healthy muscle material available. There must be an overcorrection of the deformity before the operation. . . . Arthrodesis has been satisfactory, but tendon transplantation has given better results."

Where tendons of active muscles were long enough to transplant into the periosteum, the resulting conditions were somewhat better, because of the fixity of the point of attachment, and the greater security obtained in subsequent function of that transplanted muscle. Where tendons were too short to thus obtain a periosteal insertion, Gluck's method reported at the International Medical Congress at Berlin can be used to elongate the short tendon, and thereby obtain a periosteal insertion in otherwise impossible circumstances. marked the very greatest advance that has been made in tendon transplantation, in that muscles, whether by situation or characteristic function so placed as to be otherwise unavailable, were elongated by tendon lengthening by silk strands. Where the silk strands are properly placed and the proper technique followed, it has been

found that the silk strands subsequently become a mass of fibrous tissue, and the interstices of the strands infiltrated, clearly indicating that they have not been absorbed, but have been the means of permanently establishing a direct line of contact between the active muscle and the periosteal insertion by means of the silk strand.

The great extent to which silk-strand elongation has opened up new fields can be illustrated by cases in which there has been paralysis of the hamstring tendons and control of the knee-joints lost through inactivity. In some such cases as this a part of the erector spinæ mass has been utilized by means of silk strands attached to the lower tendon, the fibrous part of the lower part of the muscle carried down beneath and attached to the periosteum at the upper and posterior part of the tibia. The function in many of these cases has been wonderfully improved, and there seems to be therefore no limit to the possibilities where an aseptic field is invaded in a strictly aseptic way required by the procedure. The operation is not without risk, as shown by the many cases in which silk strands have become detached, leaving the conditions no better than they were previously.

The relaxation of the ligaments around the joints or muscles, which have been either in part or in entirety the seat of the original paralysis, otherwise known as flail joints, have been subjected to various forms of surgical procedure in order to secure stability. Silk strands carefully sutured into periosteum have added materially to the increase in the stability of the joint, thereby increasing the function. In this method it is aimed to reënforce the relaxed ligaments of a joint by using silk strands with firm attachment at each end in periosteum. At times it is necessary to have a limitation of motion rather than excessive action, and the resort to silk strands or silk ligaments frequently efficiently aids in securing the desired object.

In certain joints stability can best be obtained by arthrodesis. This operation is not adapted to patients under twelve years of age, because it has been found that the removal of all the fibrocartilage of joints,

thus bringing the bony surfaces into firm contact, is rarely ever followed by bony union in young children, whereas after twelve years of age such an arthrodesis is followed by bony union and greater stability of the affected joint. There are certain joints in the body where arthrodesis can be performed greatly to the benefit of the patient, and there are other joints where such arthrodesis would produce conditions of rigidity that would not materially benefit the patient. The ankle-joint is peculiarly a field where arthrodesis can accomplish the best results. Goldthwait<sup>33</sup> and Whitman have each devised methods possessing great advantages. On the contrary, where the knee becomes rigid, an excessive amount of motion is thrown upon the hips which in infantile paralysis are rarely capable of sustaining a greater strain than that to which they are already subjected.

For a number of years nerve transplantation and nerve anastomosis have been attempted with very indifferent results. In many of the experiments on animals, nerve transplantation has taken place with results that seemed to promise great things for the future in cases of paralysis, but in these animal experiments healthy nerve was transplanted into nerves not previously involved in a process of infantile paralysis, and the results obtained, while illuminating, gave very little clear indication of what could be accomplished where healthy nerve was transplanted into an inactive one. A few cases are on record in which the results of animal experimentation have stimulated operators to employ identical methods in cases of infantile paralysis, and occasionally favorable results have been reported in improved function of the previously paralyzed

Robert B. Osgood's<sup>34</sup> very sound conclusions are based upon a thorough analysis of the favorable results obtained by nerve grafting in infantile paralysis reported by Spitzy, Ballance and Stewart, Rivers and Head, Langely and Anderson, Kilvington and Dunlap, Taylor, Peckham, Hackenbruc, Tubby, Sherren, Henle, Young, and the convincing reverse statements of Warrington and Murray, that "there have been few

successes and many failures." Osgood says that "in attempting this procedure (neuroplasty) we should at present confine ourselves to operative methods by which, if the end sought is not gained, we shall at least not have added disability to that already existing, and we should have constantly in mind the maxim of Ambrose Paré that the first duty of the surgeon is to do no harm."

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### THE RECOGNITION AND TREATMENT OF SOME OF THE COMMONER FORMS OF UTERINE DISPLACEMENT.1

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In this paper I have restricted myself to those displacements of the pelvic organs in which descensus or prolapsus of the uterus plays the most important part. They are not only the commoner forms of displacement, but are the ones most prolific in the production of symptoms—symptoms that range in extent from a slight local disturbance to neurasthenia. In this class I have included, besides the ordinary uterine prolapse of varying degrees, the posterior displacements, retroversion and retroflexion as well, for in the latter forms we not only have the organ displaced backward, but with the ovaries and tubes occupying a lower plane in the pelvis.

In order to fully comprehend the significance of abnormal deviations of the uterus, it is of importance to have a proper conception of the normal position of the organ. The uterus has no fixed normal

1Read before the Kensington Branch of the Philadelphia County Medical Society.

position, but maintains a place in the pelvic cavity in a state of mobile equilibrium, with, however, a constant tendency to an almost horizontal position anteroposteriorly, so that in the erect position, the bladder and rectum being empty, the fundus of the organ is found immediately behind the symphysis, while the cervix, forming an angle with the vagina, is about 2 centimeters anterior to Moreover, the the point of the sacrum. physiological displacement consequent on change of posture, intra-abdominal pressure, filling and emptying of the rectum and bladder, must be considered; and a displacement not regarded as abnormal unless uninfluenced by these conditions. Furthermore, for the purpose of treatment, it is essential that we should be familiar with the structures that maintain the pelvic organs in their normal position.

Briefly, I may state that they are held in place by the upper peritoneal and lower muscular floors. The former, consisting of the peritoneum, connective tissue, and muscular elements, suspends the organs in their normal position, whilst the lower, made up of the muscular structures and pelvic fascia, gives support below. This is well exemplified in cases of retrodisplacement and beginning prolapse, by the support afforded a relaxed peritoneal layer by a pessary resting upon an intact lower muscular floor. If these structures are deficient congenitally, or weakened by unhygienic conditions during childhood or puberty, or, as is more often the case, the result of faulty obstetrics or improper care during the puerperium. the result is the same. With the relaxation of the upper layer, descent of the organs begins. An instance of this is the development of a simple retroversion or flexion. The uterus drops to a lower plane, the cervix shifts forward, and the loosely swung body and fundus drop back, being influenced to a greater or less degree by the posterior attachment of the broad ligaments. Between the shifting forward of the lower segment and the resistance of the broad ligaments, the organ gradually presents its anterior surface to the intraabdominal forces and the displacement is accomplished. In retroversion, the body and fundus are displaced backward and downward in the hollow of the sacrum, while the cervix very nearly approaches the symphysis pubis; in retroflexion, the cervix is still nearer the symphysis, and the body is pressed still further downward and backward, forming with the cervix an angle presenting posteriorly.

The evolution of the major forms of prolapse is but a variation of a similar process. At an earlier stage the organ, even in the presence of an intact outer floor, is driven downward in the axis of the pelvic canal into a state of primary uterine prolapse. With relaxed lower structures, however, the sagging vaginal walls, augmented by the emptying of the bladder and rectum, drag the uterus down, and in extreme cases entirely outside the pelvic cavity, into a condition of secondary prolapse.

In considering the diagnosis of these displacements, the physician must not content himself with the recognition of the malposition alone, but he must include all the changes present in the organs that take part in the displacement. To determine these, a systematic examination of the vulva, perneum, vagina, uterus, ovaries, tubes, rectum, and bladder is necessary.

With the backward displacement of the uterus, as a result of the relaxation of the infundibulo-pelvic ligaments, the ovaries and tubes are almost invariably found at a lower level, and frequently in the posterior cul-de-sac. The bladder, on account of its close attachment to the anterior wall of the cervix, is also subject to its effects, not to the degree that occurs in a major prolapse of the uterus, with the displacement of that organ to a much lower level, but sufficient to give rise to symptoms of vesical irrita-The rectum is equally involved in both forms of displacement, but in different ways. The enlarged body, in retrodisplacements, by direct obstruction, is not only a fruitful source of constipation, but its interference with the return circulation is the cause of hemorrhoids and kindred troubles. In uterine prolapse the rectum is dragged down until rectocele, with its attendant evils, results.

If we add to the effects produced by the displaced organs the reactions coming from a congested and inflamed uterus, the ovaries and tubes, and consider the intimate relation that exists between the pelvic organs and the general nervous economy, we can understand why the diagnosis of uterine displacements must include in its scope the associated and complicating conditions as well. As the symptom-complex expressive of these conditions varies from a simple backache to neurasthenia, the diagnosis must depend upon the objective findings alone, which is not always as easy as one would desire.

Often an inkling of the position of the uterus may be obtained by the position of the vaginal portion. If the cervix is in the pelvic axis and the os is directed forward and downward, the uterus is usually retroverted, but may be anteflexed. On the other hand, if the cervix is anterior and is directed downward, it is usually retroflexed, but may be in a state of anteposition. The

distinctions can ordinarily be made by bimanual palpation, but unfortunately, at times, on account of the thick abdominal walls and intestines, the external hand cannot feel the body. When this is the case, the fingers in the vagina are usually able to recognize the body continuous with the vaginal portion of the cervix, and in retroflexion, the angle on the posterior aspect. A further corroboration can be obtained by rectal palpation, it being possible with one finger in the rectum, the other hand making deep pressure over the abdomen behind the symphysis, to outline the body of the uterus and demonstrate its continuity with the cervix.

Occasionally one meets with a case of anteflexion in which the entire cervix is enlarged lying in the axis of the vagina, when palpation through the posterior fornix gives the impression of a posterior displacement, but rectal palpation fails to reveal the body, and closer examination shows a small body anteflexed on a large cervix. Conversely, in the early months of a retroflexed gravid uterus, an enlarged cervix may simulate a posterior displacement, whilst the soft fluctuating globular body resembles a complicating cyst. careful examination, however, the contractibility of the uterine musculature can be determined, and its continuity with the cervix elicited.

Small cysts, fibroids, remains of hematoceles, and posterior parametritic exudates, may all, from their position in the posterior half of the pelvis and their close connection to the uterus, resemble posterior displacements. Careful attention to the position of the cervix, with vaginal, abdominal, and rectal palpation, will usually demonstrate the presence of the body continuous and movable with the cervix, anterior to the masses, and differing from them in consistency. On account of their fluid contents, cysts are more elastic and sometimes fluctuating; fibroids are harder, and to a degree circumscribed; while the inflammatory tumors are more sensitive, and even painful to the touch.

Uterine prolapse is commonly classified as complete and incomplete. In the former

varieties the uterus, accompanied by the prolapsed and inverted vaginal walls, is entirely outside the pelvic cavity. The anterior vaginal wall contains the displaced bladder (cystocele), and the posterior the rectum (rectocele). The cervix and immediate vaginal walls are usually thickened, and often covered with decubital ulcers. As the process may be arrested at any stage of its development, a minor form or incomplete prolapse may occur.

The erect posture is a most excellent one to determine the degree of prolapse, as the uterus frequently slips back when the individual lies down. It is rather an indelicate method, and for that reason rarely practiced. The degree and character of the prolapse, however, can be determined quite accurately with the patient in the recumbent position, by having her bear down and at the same time making traction upon the cervix with the fingers or tenaculum forceps. The question of primary or secondary prolapse can be readily decided by the condition of the vaginal walls. In the former the uterus has descended first and dragged the inverted vaginal walls after it. In the latter the vaginal walls, especially the anterior containing the bladder, has preceded the uterus, and continues to exercise traction upon it. In secondary prolapse not infrequently the uterus maintains its more or less normal position in the pelvis on account of the firmness of the upper floor, and the supravaginal portion of the cervix is elongated, stretched as it were, by the traction of the vaginal walls. The presence or absence of supravaginal elongation is most important, on account of its bearing on treatment. It can be readily diagnosed by placing a finger in the rectum and the thumb on the cervix, while the fingers of the other hand make deep pressure over the lower part of the abdomen. In this way the length and position of the entire organ can be determined. If the subject has thick abdominal walls, a sound may be introduced into the uterine cavity. Elongation gives a length of 12 centimeters or more. Supravaginal elongation must never be confused with hypertrophy of the infravaginal portion of the cervix. The latter occasionally

occurs, and may be recognized by the presence of a large cervix in the vagina, with the body and the vaginal walls in their normal positions. A fibroid polyp and inverted uterus can both be eliminated by careful investigation. In the one the uterus occupies its normal position, and the presenting polyp can be followed up to its normal uterine attachment. In the latter. while the hand steadies the inverted uterus in the vagina, deep pressure behind the symphysis discloses a cup-shaped depression at the former site of the body and fundus. Rarely a cystocele may be mistaken for a cyst of the anterior vaginal wall, and a rectocele for an accumulation of fluid in the peritoneal cul-de-sac. A sound introduced into the bladder, and a finger into the rectum, are always the surest ways of preventing these errors.

As inferred from the foregoing part of this paper, the end result of any operation for the various forms of ptosis of the pelvic organs, and this embraces retroversion, retroflexion, and prolapse, will be wanting unless the function of the upper pelvic layer is restored, besides the correction of any defects that may exist in the lower floor.

The pessary is a mere temporary expedient, and can only be used when there is a good muscular floor. Operations for the repair of the lower plane, alone, are insufficient. Suspension operations, as exemplified by ventrosuspension, fastening the uterus to the lower end of the abdominal incision, or kindred procedures, are unsatisfactory. Nor are those operations that have for their object the proper support of the uterus satisfactory, if done through the lower outlet. To-day an operation of this character, done through an abdominal incision, carries with it little more danger than did formerly an ordinary dilatation and In addition, entering the curettement. pelvic cavity from above affords the opportunity to correct any of the associated and complicating evils. During the past few years I have operated upon quite a number of apparently uncomplicated cases of retrodisplacement, in which the individuals suffered from constant pain and soreness in

both iliac regions, symptoms for which there was no apparent cause, the ovaries and tubes not being diseased. In these cases I invariably found enormous varicoceles of the broad ligaments, and at times associated with unusually relaxed infundibulo-pelvic ligaments, that required shortening to maintain the ovaries in their normal position. Surely these conditions would quite likely have been overlooked in a purely vaginal procedure.

For the minor degrees of ptosis, the retrodisplacements, the best operative procedures are those that not only bring the uterus forward and up and maintain it in its normal position, but also take up the slack in the peritoneal layer.

It would be an unnecessary waste of time to even name, let alone describe, the many operations that have been devised for posterior displacements. It will suffice to briefly describe the procedure that I have found in my experience to fulfil every purpose-one that not only maintains the uterus forward at its normal level, lifts up the ovaries and tubes, and relieves venous engorgement, but preserves the natural mobility of the organ as well. There are no unnatural attachments to the abdominal wall, hence complications during pregnancy, labor, or the puerperium are obviated. The strongest parts of the round ligaments are utilized, and with them the peritoneum and adjacent tissue is bunched, thus converting the relaxed upper floor to its normal condition. The one I refer to is the Gillam-Simpson operation as modified by Montgomery.

The abdomen is opened in the following way: A transverse curved incision, four to five inches in length, is made above the symphysis pubis, through the skin and down to and through the true fascia; the true fascia is then dissected from the underlying pyramidali and recti muscles; these muscles are then separated, and the peritoneum incised in the median line for a corresponding length. This method of incision, besides its other good properties, gives a larger fascia surface to which the ligaments can be sutured.

After the various complications have been corrected, the operation is done in the following manner:

First, the round ligament is lightly grasped with a pair of hemostatic forceps, about two inches from the uterus. Second. the ligament is surrounded at a distance of an inch and a half from the uterus by a ligature which is threaded in a Deschamps ligature-carrier. Third, a small opening is made in the anterior fold of the broad ligament, immediately beneath the point at which the ligature surrounds the round ligament. Fourth, introduction of the ligature by means of the Deschamps needle into this opening, and carrying it along the course of the round ligament, beneath the peritoneum, toward the internal abdominal ring. In front of the ring, about one centimeter above the symphysis, and four to five centimeters to the side of the median line. the needle is brought up through the muscle The ligature is disengaged and fascia. from the needle, which is withdrawn, and the loop of round ligament is brought out through the opening. The last step in the procedure is the attachment of the ligament by means of several catgut sutures to the fascia, which has been bared at this point. The same is done on the opposite side. The amount of round ligament sutured to the fascia depends upon the degree of relaxa-The round ligament with adjoining peritoneum is carried into and becomes a part of the broad ligament, thus shortening and strengthening the anterior half of the upper pelvic floor. From Huntington's Studies of the Peritoneum we know that peritoneum thus folded on itself, or kept in apposition with other tissues, rapidly loses its endothelium, and becomes a unified structure.

In the treatment of major ptosis, prolapsed uterus with cystocele and rectocele, the procedures are more complex. In this form of prolapse we have, first, to rectify the deficiencies of the lower floor. A cystocele is almost invariably present, and if not a rectocele, at least a relaxed or lacerated pelvic floor. It has been my practice in the last few years to operate these cases in the following way:

If the woman is less than forty years of age, after a D. and C., the cervix, if hypertrophied, as it so frequently is, is amputated by the double flap method of Schroeder. Second, correction of the cystocele, and upon the proper repair of this condition depends the success of the oper ation. The steps for the correction of the cystocele are as follows: First, median incision extending along the anterior vaginal wall from the cervix to the urethral eminence. Second, complete separation of the vaginal wall from the vesical wall. Third, excision of redundant vaginal wall. Fourth, separation of bladder wall from its connection with the anterior surface of the cervix, pushing it up to its normal level, and maintaining it there by attaching it to the anterior surface of the cervix with sutures introduced at a lower point in the bladder Fifth, the separated vaginal walls are now brought together with catgut sutures. Suturing is done from behind forward, care being taken to include in the sutures the subvaginal fascia.

This operation not only removes the redundant vaginal wall, and places the bladder on its normal plane, maintaining it there by sutures, but does not decrease the length of the anterior vaginal wall, which is of great importance in obviating subsequent traction on the cervix.

The third procedure is the repair of the lower floor. The method of doing this will depend largely upon the presence or absence of rectocele and its size. Any of the modifications of the Simon-Hegar triangular vaginal resection will do. principles underlying successful pelvic floor repair work are, first, to separate the whole vaginal wall, not merely the mucous membrane (this can best be done with a gauze sponge), from its underlying structures, with removal of as much of the relaxed wall as necessary; and secondly, in bringing the retracted ends of the levator ani muscles together. The vaginal walls can be brought together by interrupted or continuous catgut sutures.

The fourth procedure consists in opening the abdomen, repairing the tone of the upper plane, and maintaining the uterus up and forward by means of the operation described in the treatment for retrodisplacements.

In those cases in which there is hypertrophic elongation of the supravaginal portion of the cervix, or in women who have entered into the fourth decennium of their lives, after the cystocele has been operated upon (suturing of the bladder to the cervix being omitted) and the pelvic floor repaired, the uterus is removed, either through an abdominal or vaginal incision. In either case the subsequent procedures are the same. The ends of the broad ligaments are sutured together, and the bladder, instead of being sutured to the anterior surface of the cervix, is sutured at a higher level to the anterior surface of the broad ligament stumps. The anterior vaginal wall, to assure its remaining in place, is also fixed to the stumps of the ligaments.

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# THE DIAGNOSIS AND TREATMENT OF INTRAVESICAL LESIONS.1

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To correctly diagnose the lesions responsible for vesical symptoms it is necessary to take a broad view of the case rather than to limit oneself too early in the examination to a consideration of the bladder alone, lest one make the mistake of diagnosing an intravesical lesion when none actually exists. Lesions outside the bladder may cause symptoms so exactly paralleling those of intravesical disease, producing changes in mobility, sensibility, and character of the urine, the three classes in which vesical symptoms naturally group themselves, that except by a careful examination a diagnosis is impossible. Obviously the converse of this proposition must also be true, and there is abundant opportunity of mistaking intrafor extravesical lesions if a diagnosis of the latter be made on insufficient evidence.

The means at our disposal for the determination of the location and character of the lesion are numerous, but on account of the complexity of the problem presented all must often be utilized to attain an accurate diagnosis, though a shrewd guess founded on the history is not infrequently correct.

The patient's history in so far as it pertains to the health of the genito-urinary organs and the progress of the present trouble is of the greatest possible value in directing the search, while not seldom history entirely apart from all apparent relation to the genito-urinary organs, as in regard to tuberculosis either in his own person or in his family, may be of great assistance in solving a perplexing problem.

The examination of the urine may be placed second to the anamnesis in the systematic examination. This should include the macroscopic examination of the urine voided in several portions as well as the chemical and microscopic analysis in order to determine to some degree the source of an existing pyuria or hematuria, such examination being of greater diagnostic aid than the routine laboratory findings. In selected cases inoculation tests are of value.

But it is upon the physical examination of the patient that the diagnosis of intravesical lesions must depend to the greatest extent. The more general and thorough this is the better; in its most abbreviated form it should include the external genitalia, the prostate and seminal vesicles in the male and the uterus and tubes in women, the kidneys, the nervous system, and finally the bladder.

The examination of this viscus begins with the determination of the efficacy of the bladder muscles to empty the organ; this is determined by catheterization immediately after urination; at the same time may be determined the bladder capacity and

<sup>&</sup>lt;sup>1</sup>Read before the Philadelphia Genito-urinary Society, Nov. 27, 1911.

also to some extent the irritability of the organ.

Palpation is of value in a few cases, especially when employed bimanually. Large calculi and tumors of considerable size can often be recognized in this manner.

The classical method of diagnosing calculi by means of the vesical searcher is efficient in the majority of cases, though this examination is now usually supplemented or superseded by the x-ray and cystoscope.

The last method of examination to be mentioned, the inspection of the bladder through the cystoscope, should be likewise the last method to be employed in practice. From this it should not be inferred that the cystoscope is to be considered as a dangerous instrument or one whose employment should be restricted to a very few cases, being only used where the examiner is at a loss to account for the symptoms without its help: rather its aid should be more frequently sought, as its use is not in any way prejudicial to the welfare of the patient when the manipulations are made gently in the absence of acute inflammation. The object in placing cystoscopy at the conclusion of the examination is to put the examiner in possession of the greatest amount of information possible in advance of his inspection of the bladder, that his interpretation of the changes observed may be as accurate as possible.

For the treatment of intravesical lesions the resources at our command again are very numerous, but not more varied than are the indications for their employment. The effort in each case should be to remove the cause of the condition whenever this is at all possible, depending on this in great measure to secure the cure of the lesions themselves. The causes of the perpetuation of intravesical disease most often met with are faulty drainage and descending infection from the kidneys. Regular or continuous catheterization, either through the whole urethra or through an incision in its prostatic portion, or drainage through a suprapubic cystostomy, or the removal of an obstructing prostate or stricture, are the methods used in combating the former factor. Lesions of the kidneys must receive appropriate treatment, whether this be lavage of the pelves through ureteral catheters or the removal of a diseased organ. Meanwhile the bladder should be medicated through the medium of the urine by the exhibition of drugs by the mouth, and by the more direct means of irrigation, instillations, and topical applications through the operating cystoscope.

Benign tumors may be removed by excision by the transurethral or suprapubic routes, or by desiccation by the Oudin current. The excision of histologically benign papillomata has not been as successful here in producing permanent cures as might be expected from the results obtained with this method in the treatment of similar tumors in other parts of the body. Vesical papillomata show a strong tendency to recur, either at the site of the former growth or at some distant point, even when the whole thickness of the bladder wall is resected with the tumor. For this reason and because the treatment can be carried out without the administration of a general anesthetic and without incapacitating the patient even temporarily, desiccation with the Oudin current, applied directly to the tumor through the catheterizing cystoscope, is the method to be selected whenever practicable.

In the case of malignant tumors of operable extent the choice lies between partial and total cystectomy, the latter being combined with the implantation of the ureters in the bowel or in the skin, or with nephrostomy, as may be deemed advisable, the diversion of the urine being accomplished either at the time of the cystectomy or as a preliminary step a few days prior to the removal of the bladder. The Oudin current may be of value in the treatment of malignant as well as of benign tumors, but as yet its use cannot be advised except when the radical operation is refused, or as a palliative method in inoperable tumors.

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### POSTOPERATIVE TREATMENT OF PROSTATECTOMY.

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Much has been written upon the relative merits of the various operative procedures for the removal of the prostate. Many statistics have been compiled to prove which is the better—the suprapubic or the perineal route. It is surprising, upon looking over the literature on prostatic work, how little has been written regarding the after-treatment of prostatectomy, which to my mind is vastly more important than the operative technique. It matters little which operation is performed, if the patient recovers and is relieved of the annoying urinary symptoms, his recovery, in my opinion, depends upon the care and attention given him after the operation.

The postoperative treatment may be divided for convenience into three stages:

First, the period immediately following the operation.

Second, convalescence.

Third, the period covering, at least, six months.

During the first period, that immediately following the operation, the most important elements to be guarded against are shock, hemorrhage, anuria, and sepsis.

In considering shock and its prevention I will be compelled to dwell for a moment upon the preparation of the patient preliminary to the operation. I will consider the question of anesthesia, which, in these old gentlemen upon whom prostatectomy is performed, is of paramount importance. In clean cases—that is, when there has been no existing cystitis either of long or short duration and other things being equal-the operation may be performed at once; if the bladder has been infected, then a week or two of preliminary treatment, for the purpose of rendering the field of operation as aseptic as possible. It is well also to institute constitutional treatment for the purpose of increasing the resistance of the patient.

As little preliminary work as possible should be done upon the patient in the

operating-room, and everything made ready for the operation before the anesthetic is given, thus shortening the time of the anesthesia, and reducing the possibilities of shock. It is my custom to have the bladder irrigated and filled and have the skin surface cleansed just prior to the beginning of the anesthetic, the bladder being filled with formalin solution 1:4000, and the skin surface painted with tincture of iodine.

It has been my practice in the majority upon whom I have operated to use nitrous oxide gas and oxygen as an anesthetic. This is safe, rapid, and reduces to a minimum the chances of shock and anuria. and also, as may occur in ether anesthesia, prevents to a great extent the dangers of pneumonia. I feel that one of the exciting causes of shock, particularly in the aged, is the persistent nausea, vomiting, and straining which follows ether or chloroform anesthesia; this is entirely eradicated by the use of gas and oxygen. The patient fully recovers before leaving the operating-room, and is free from the annoying untoward conditions which are so greatly feared when other anesthetics are employed. I am compelled, however, to call attention to one class of patients in whom gas and oxygen anesthesia is contraindicated. If the patient has a myocarditis, then ether is the safest to employ. Gas and oxygen anesthetic is not an easy one to administer, and for the best results it must be left in the hands of the expert. It is impossible for the interne or one not familiar with this form of anesthetic to know the proper mixtures, and to readily recognize untoward conditions.

My anesthetist has given many thousands of gas and oxygen anesthesias, and I must admit I employ it in cases in which ordinarily this anesthetic would be contraindicated. Even when ether or chloroform is used I feel that in these cases in old men it is the safest plan to employ an anesthetist who has had much experience, for the pa-

tient should be kept under the influence of the anesthetic by the use of the smallest possible quantity.

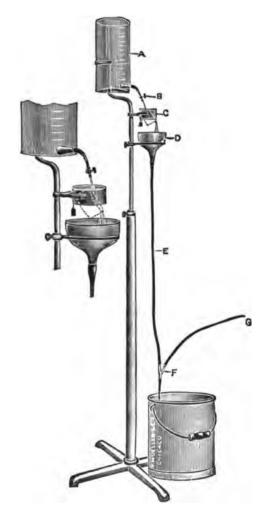
Immediately following the operation and continuing for twenty-four hours hot salines per rectum, by the drop, are employed. This is done in every case, influencing a decided action upon the postoperative shock and anuria. Strychnine is administered in conjunction with the saline for the first twenty-four hours if it is indicated.

After the prostate has been removed, a 32 F. sound, or one as large as the caliber of the urethra will allow, is passed into the bladder, a meatotomy having been performed if necessary to allow the passage of the instrument. The region around the internal urinary meatus is carefully examined; if there are any fragments of tissue these are removed. The bladder is then irrigated with hot formalin solution 1:4000, which will, as a rule, stop the bleeding; only occasionally is it necessary to pack the bladder to control the hemorrhage.

A drainage-tube about 27 or 28 F. in size is inserted, this having thick walls to prevent collapsing, and the bladder is closed snugly around the tube, the structures being brought together with as few sutures as possible, reducing chances of infection. The tube is brought out of the upper angle of the skin incision. The bladder must be drained, as the process of drainage is the most important phase in the after-treatment of the case, as upon perfect drainage depends almost entirely the success of the operation, for by perfect drainage we minimize the danger of shock, anuria, sepsis, and hemorrhage. Drainage in these cases has been the bugbear of operators since prostatectomy has been classed among the scientific, justifiable operations. All varieties of drainage apparatus have been devised. Most of these have been discarded as useless. Some operators use nothing but a tube which drains by gravity, others recommend the use of a tube of large caliber, through which, if the drainage is not perfect, blood-clots, etc., may be removed by the nurse in charge with a long pair of forceps, increasing by this method, as one can readily see, the chances of infection.

The author has devised a drainage apparatus which carries out all of its function automatically and with precision, producing absolutely perfect drainage—the apparatus shown in the accompanying cut, and herewith described:

After the patient is placed in bed the tubing is connected with the drainage-tube



from the bladder. The Y-shaped tube F must be below the level of the patient lying in bed; the reservoir A filled with water, the stop-cock B turned so that the water will drop slowly into the cup C, which, on being filled, tilts and empties itself into the funnel D. The water running down the long tube E into the Y-shaped tube F forms behind it a suction which causes a siphon-

age of the fluid in the bladder. This siphonage may be regulated to occur at any given interval by arranging the flow of water from the stop-cock B which flows into the cup.

I am sure that those who are doing much bladder work have met with the same difficulties in perfect drainage as I have met with in my work, and that if they will take the occasion to use the apparatus which I have devised they will be satisfied with the results.

By perfect drainage you render your patient comfortable, the bladder does not become distended, clots cannot form, the dressings are dry, the bladder cannot fill up, the urine cannot wet the dressings, thus irritating the wound and preventing healing, and cannot trickle into the tissue of the prevesical space and engender sepsis. I have used this apparatus in a large number of cases, and feel, without a doubt, that my satisfactory results have been due almost entirely to perfect drainage.

I might call attention to another important feature of the drainage apparatus herewith described: with its use one can readily tell how much urine the kidneys are excreting. This is accomplished by measuring the fluid in the reservoir, also the urine, blood and water in the receptacle under the bed, subtracting this former amount from the latter, the difference being the urine and the blood. This knowledge is very essential, as it is an aid to know the functional capacity of the kidneys.

I might suggest a precautionary step to be taken in regard to placing the drainagetube in the bladder. Care must be taken that the end of the tube does not come into contact with the floor of the bladder.

Two cases of anuria have occurred in my practice, produced reflexly by irritation of the tube in the bladder; it was necessary in both cases to remove the tube. Shortly afterward there was a copious flow of urine; there had been no urine in the bladder, as was shown upon removal of the tube, and the tube was proven not to have been blocked in any way. It has been my practice for several years to endeavor by

the recognized tests to estimate the functional activity of the kidney, not only in cases in which surgical work is to be done upon the kidney, but whenever it is necessary to operate upon any portion of the urinary tract. It is very important in operations upon the prostate, particularly when the condition has been of long standing and there is danger of kidney complications.

During the first twenty-four hours the drainage apparatus is so set that it will empty the bladder completely every five minutes, during the second twenty-four hours every ten minutes, thereafter every fifteen minutes. The apparatus will carry out its function no matter what the position of the patient; he may be in the dorsal position, may be reclining in bed, or sitting up in a chair. The apparatus is employed for five or six days, when the tube is withdrawn. During the first twenty-four hours a metal catheter 28 F. is passed per urethra into the bladder and the bladder irrigated with formalin solution 1:4000, or followed by an injection through the catheter of one of the silver salts. I prefer a 2-per-cent solution of nargol, which has acted most favorably in my practice for the last six or seven years.

This procedure is carried out daily for three weeks. During the third twenty-four hours the patient is allowed to sit up in bed, and the next day, the fourth day, he is allowed to sit up in a chair. He is encouraged to sit up daily and walk about as much as he can; usually within three weeks the patient may leave the hospital.

From the time the patient leaves the hospital until at least six months have elapsed he should be kept under observation. This sometimes is difficult, owing to the fact that the patient comes to us from a distance; however, his treatment should be carried out by his physician.

I suggest irrigation of the bladder at least once a week for several months, and oftener if there is evidence of pus in the urine; the urethra should be dilated occasionally. After six months I insist upon a cystoscopic examination, and if the blad-

der at this time is normal in appearance, and the patient in a comfortable condition, he is discharged. Keeping the patient under close observation is very important, as complications are so apt to occur. We are familiar with the frequency with which there is the formation of vesical calculus following operation, especially in septic cases. Careful treatment will prevent all these untoward sequelæ.

Many patients come under my observation as cured suffering with symptoms nearly as annoying as prior to the operation—pain, frequency of urination, both by day and night, and a severe cystitis. But if proper care had been given after the prostatectomy there would have been, in the majority of cases, excellent results.

I might suggest that if a well-outlined course of after-treatment be instituted along the lines indicated above the result will be surprising. The patient will be more comfortable during the first few weeks following operation, and when he is allowed to depart he will do so as nearly recovered as it is possible to get these old men.

7 WEST MADISON STREET.

# DISLOCATION OF THE HIP CAUSED BY INFECTIOUS ARTHRITIS.

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In recent years joint infection occurring during or immediately following systemic infection of the eruptive and other febrile diseases has become recognized as the etiological factor in the production of joint diseases.

The resulting destruction of function varies from the mildest form of limitation of motion to ankylosis and to pathological dislocation. The destruction of the joint surfaces varies from thickening of the synovial membrane to erosion of the articular cartilages. Inflammatory deposits frequently completely obliterate such joint cavities as the acetabulum, the glenoid cavity, etc., while the bones composing the joints ultimately present evidences of bone destruction and altered contour.

The type of infectious arthritis that most frequently occurs in connection with infectious diseases is characterized by the rapidity of onset, virulency of action, generally monarticular in the severest cases, polyarticular in the mildest cases, sudden rise of temperature that has no explanation in the systemic affection, severe local pain, swelling, and redness.

Bradford and Lovett (1911) emphasize the importance of giving due consideration to the presence of the staphylococcus, streptococcus, and the organisms peculiar to the primary disease and to the chronic joint affections that may result.

Late reports of cases generally reveal that the attention of the attending physician had been directed to the concurring joint involvement, but the gravity of the affection or the subsequent dangers have not been given efficient consideration. Acute joint rheumatism or even bone tuberculosis is often ascribed as the cause of the onset of the joint affection, and through error much valuable time is lost in efforts to save the joint from utter destruction.

The onset is so rapid and violent that there is absolutely no resemblance to the insidious onset of bone tuberculosis. The occurrence of the joint involvement during an attack of an infectious disease should be sufficient to direct attention to infectious arthritis rather than to the occurrence of such an affection as acute rheumatism.

The seriousness of the resulting destruction of joint function warrants the most painstaking attention to acute concurrent joint affections that occur during measles, scarlet fever, diphtheria, pneumonia, gonorrhea, etc.

The actual destruction of joint surfaces from the infectious process is often great,

but this is almost always supplemented by alteration of contour caused by abnormal function.

Wolfe emphasized the now well recognized fact that persistent alteration in the function of joints or other structures necessarily results in anatomical changes, sometimes difficult to differentiate from pathological destruction.

Many may hold to the view that without a bacteriological or pathological research of the joints involved the etiology will be unknown.

The object of this paper is to show that by a careful analysis of the onset and clinical course of the process, together with radiographic study, the infectious character will be revealed.

In 1856 Helwig was able to collect a number of cases, 12 of which were posttyphoidal dislocations following arthritis.

Keen in his "Surgical Complications of Typhoid Fever" has records of 142 joints, and out of 84 patients 43 had pathological dislocations.

Cave collected 31 cases of arthritis of pneumococcal origin, and many others can be cited who have proven its infectious origin.

Hare and Beardsley (The Medical Complications, Accidents and Sequels of Typhoid Fever and the other Exanthemata, 1909) speak convincingly of the occurrence of joint affections, including dislocations directly associated with typhoid fever, scarlet fever, and measles. Typhoid spine is considered (page 248), and reference is made to the statistics of Fluss (Centralbl. f. d. Grenz geb. d. Med. u. Chir., No. 8, Bd. xvii to xxi) and Silver (Am. Jour. Orth. Surg., October, 1907).

Attention is directed to joint complications during variola (page 312) with reference to reports upon the subject by Voituriez (Jour. des Sci. Méd. Lille, 1903, xxiii, p. 93). Debryre (Echo Méd. du Nord, Lille, 1903) and Ingelraus (ibid.), "Scarlatinal Synovitis or Scarlatinal Rheumatism," refer extensively to the literature (page 324). Arthritis complicating measles is stated (page 370) to be an extremely

rare condition, but certain bone diseases are more common than shown by the very limited literature on the subject. Their explanation is that the development of the bone lesions long after convalescence from the attack of measles has diverted attention from the original infection. The same may be said of varicella, as noted on page 379, and of rubella, page 389.

The points to which attention is now directed are: (1) The Etiology; (2) the disease itself; and (3) the treatment. From the etiological point of view infectious arthritis takes its origin in the majority of instances from the acute infection already present.

Goldthwait, of Boston, has called attention to the fact that the infectious arthritis, particularly in younger children, has a peculiar relationship to infectious diseases. He mentions pneumonia and influenza as frequent causes.

H. L. Taylor shows that all the acute infectious diseases, such as pneumonia, influenza, measles, scarlet fever, typhoid fever, and diphtheria, are capable of exciting joint inflammation.

In regard to the determination of the infective arthritis, Goldthwait says that the method of onset is of great significance, and he further states that an infective process is apt to develop suddenly, and that the fewer the joints affected the more severe will be the destructive changes. It is his opinion that if fleeting symptoms usually referred to other joints during the acute inflammation in the affected joint be absent, then very little can be gained from the history alone to aid in diagnosis.

However, if during an infective disease there occurs in a joint sudden onset of local pain, tenderness with stiffness and spasm, together with the general symptoms of a febrile process, we can, with the knowledge of the already existing infection, make out the etiology of the arthritis.

The old theory of Petit, that hydrops of a joint, the cavity being greatly distended with fluid, the assistance of slight external force, was sufficient to dislocate the head, will be at once practicable. The Disease.—Whatever the infecting organism might be, it certainly has a very pronounced action on the joint involved.

The acute inflammation has a rapid course, causing early disorganization of joint structure and often resulting in a pathological dislocation, as the accompanying case will illustrate.

There is also a tendency to abscess with a dissemination of so much toxic material into the system as to result fatally after involvement of serous and mucous membranes. However, there may be no pus in the joint, in which case the course is short and little destruction observed.

The signs and symptoms are not unlike any other arthritis, except in the fact that there is an acuteness and constancy of symptoms, a rapid destruction of the articular surfaces, and with the predominating infection are sufficient to establish its entity.

The confounding of tuberculosis and rheumatism with this disease leads to their differentiation at this point.

In tuberculous arthritis the course is slow, coming on insidiously, only trivial symptoms being at first noticed; the condition lasts for months, and may be apparently arrested any time during the first progress of the disease.

There is an early muscular spasm with flexion deformity and free motion absent until months or years have elapsed; oftentimes no motion is ever obtained.

Pain is an intermittent and fleeting symptom, but is always associated.

Joint rheumatism is not a common affection of childhood, nor is there a tendency to suppuration; the characteristic progressive involvement of the joints successively with special tendency to serous inflammations is enough to prevent any doubt concerning it. Rheumatism rarely affects a single joint.

The Treatment.—A case of infectious arthritis of the hip, if seen early before any destruction has taken place, should be immobilized, which is exactly the procedure attempted by nature, viz., the hip being held in slight flexion, abduction, and exter-

nal rotation. In this position the limb should be maintained by means of the plaster-of-Paris spica, which should be extended to the knee or ankle.

If, however, there are marked toxic symptoms indicative of much necrosis and destruction of articular surfaces, then the joint should be opened aseptically and efficient drainage secured.

When the toxic symptoms subside the child should be placed in a chair and wheeled into the open air.

As soon as the strength will allow, the patient should be made to walk a little with the cast still applied and using crutches as a support. The cast can be allowed to remain for two to six weeks. After the removal of the cast, exercises should be instituted, the autoresisting exercises being the most useful. They should be kept up for an indefinite time with the object of preventing ankylosis.

If the joint is complicated by a suppurative focus and it is on the verge of rupturing, then it should be incised and the cavity cleaned completely with a saline or weak sublimate solution; it should be cleansed until every vestige of infective material has been removed. No curetting of the bony parts is necessary, simply the removal of infective material by means of sterile gauze. The incision is closed without drainage, or left open with drainage, as the exigencies of the case demand. Subsequent closure of the wound can be secured by surgical measures.

If a suppurating focus is observed, but no fluctuation, then a cast may be applied with a fenestrum over the area. The child is removed to the open air, and often the focus will disappear as the general condition improves.

The above method of treatment is peculiarly necessary for several reasons:

- 1. It prevents friction of articular surfaces.
- 2. It diminishes the tendency to pathological or spontaneous dislocation.
- 3. It prevents an overstraining of the spasmodically contracted muscles.

- 4. It permits of early removal from bed, thus preventing the depressed conditions following long confinement.
- 5. It induces a useful position for function if ankylosis is unavoidable.
- 6. The results obtained from its use are very satisfactory. If, however, a dislocation has taken place during the stage of joint destruction, it is necessary that the head should be reduced and retained in a long spica cast. But if such pathological changes have taken place as ankylosis, filling up of acetabulum, obliquity of acetabular rim, with atrophied and contracted muscles, the attempt to reduce is useless. The best that can be done is to neutralize the shortening by elevation of the shoe.

The history and associated facts of the following case will reveal the importance of this method of treatment, as far as the previous discussion is concerned:

Patient, M. G., aged eight years, born in the United States, female, occupation school-girl; admitted to the Orthopedic Department of St. Agnes Hospital July 7, 1911.

Family history: Father and mother living and well; three sisters and two brothers in good health; one brother died from an attack of measles. No history of syphilis or tuberculosis obtainable.

Personal history: Up to January of 1911 patient had good health except for a slight attack of chicken-pox at four years. In January, 1911, she developed an attack of diphtheria, which lasted over a month and from which she entirely recovered. Following the diphtheria in February, 1911, she developed measles with an accompanying pneumonia. She was admitted to the Municipal Hospital. The bacteriological reports confirmed the diagnosis and recovery therefrom.

During the attack of measles the left hip became swollen, red, and painful, the febrile symptoms being more severe during the acute arthritis. She complained of pain of a fleeting character in the knee and ankle. The hip continued the same for about four weeks.

Her condition in the Municipal Hospital

became exceedingly grave. The pneumonia superinduced upon measles increased the gravity of the situation. As death appeared imminent, the urgent request of her parents that she be allowed to die at home prevailed. With a temperature of 104° she was taken home without hope of recovery. Bed-sores developed and extreme emaciation occurred. Very gradual recovery took place, a tribute to the skill of the family physician, Dr. Kelty.

In March she was taken to a hospital, and from a study of the x-ray plate the condition of the hip was considered dislocation from bone tuberculosis. Extension was made on the affected hip as well as on the unaffected one, a five-pound weight being attached to a cord over a pulley at the foot of the bed. Extension was continued for four weeks.

In April she was allowed free use of her limbs in bed; she could be wheeled about, but walking was impossible, and she suffered still from the inconveniences of a bedridden patient, viz., restlessness, lack of appetite, great weakness, constipation, and had ever since the long confinement in bed several bed-sores on the buttocks.

She was in this condition when she arrived at the Orthopedic Dispensary of St. Agnes Hospital in July, five months after her severe illness. On admittance examination showed the appearance of one convalescing from a severe illness, the whole body being greatly emaciated. The left leg was shorter than the right by 1½ inches; the adductor muscles were contracted; there was great prominence of the left hip, slight widening of the perineum, and the great trochanter was above Nélaton's line. On the right hip no abnormal relationship.

Trendelenburg's test was positive, which is a dropping of the buttock of the unaffected side below the normal level of the other, the patient standing on the affected limb.

On abducting the left limb retraction of the left labium was noticed, the entire pelvis being moved during the abduction. The opposite side showed no signs of joint immobility. The accompanying x-ray plate shows the pelvis in a tilted position, the left portion being elevated. The right hip shows a well-developed femoral head and a normal acetabulum. The left hip shows great disorganization, the roof of the acetabulum is entirely eroded away, and a little above is the crushed and disorganized head of the femur, the head having very much the appearance of a cauliflower growth. There is also an internal rotation of the



Dislocation of the hip caused by infection.

femoral shaft, the bone destruction being superficial and confined to the articulating surfaces.

It is important to emphasize the serious danger of drawing erroneous conclusions from radiograms. From the study of the radiogram without knowledge of the clinical symptoms, one might very readily consider the pathological destruction in this patient as having been caused by bone tuberculosis. If, however, the plate is considered in direct connection with the history of the affection, no other explanation than that here given can be accepted. It is now generally conceded that radiograms alone are valueless or capable of inducing erroneous conclusions. Their great usefulness consists in their being accepted as a part of the clinical investigation.

When the patient first came to the Orthopedic Department in July it was the hottest season of the year, and she was advised to go to the country as soon as possible and to get out of her chair. She was instructed to walk a little each day with the aid of crutches. Daily bathing with massage and autoresisting exercises were advised.

The patient was in the country one month. On the 9th of August she reported in a much better physical condition. She could walk fairly well using crutches, and could walk a little without any aid whatever, although this had been forbidden. Her appetite had increased, the constipation was greatly relieved, guarded attitude lessened, and there was an increase in weight.

On examination the thigh could be fairly well abducted, flexed, and extended, which on admittance was almost impossible. The musculature was better than before. Although the great trochanter still was above Nélaton's line, and consequent shortening of limb, she was in a better physical condition. When she walked the heel was elevated, the weight of the body resting on the toes.

The patient was advised to continue with the ambulatory treatment, still using crutches, and together with massage to perform autoresisting exercises, giving particular attention to the pelvi-trochanteric muscles.

On the 6th of September, about one month after her last visit and two months after admittance, patient reported still improving, the action of the hip-joint being about the same.

The tilting of the pelvis and peculiar gait have caused a slight scoliosis, to arrest which a high heel on the left side has been recommended.

It has been impossible to definitely determine which of the three maladies—i.e., diphtheria, measles, or pneumonia—caused the infection of the hip, nor just when the severity of the symptoms of the hip infection occurred.

The rapid succession of the three infectious diseases, the extremely depressed vitality of the patient, and the apparent impossibility of averting death, concurred in masking the condition of the hip.

It will be noticed that the aim at present in the treatment of this individual patient is to increase as far as possible the muscular development, and as the case progresses to institute other appropriate treatment.

The existing conditions offer no prospect

of restoration of the hip to normal position or function. Careful attention must now be given to the avoidance of subsequent and resulting deformities of other parts of the body, the production of the best possible usefulness of the dislocated hip, and to increase the general health and strength of the patient.

I have had the advantage of frequent consultation with Dr. H. Augustus Wilson both in the study of the patient and in the preparation of this paper, and feel assured that the statements herein made meet with his approval.

# MERCURIAL POISONING FROM VAGINAL ABSORPTION.

The British Medical Journal of October 14, 1911, quotes a case from the pages of the American Journal of Obstetrics and makes the following editorial comment:

The coroner of Allegheny county, Pennsylvania, recently demanded the services of Dr. C. B. Schildecker, of Pittsburg, for the investigation of three cases of fatal mercurial poisoning. In each instance the deceased was advised by a friend to "use" antiseptic tablets.

The first patient was single, and had reason to suspect that she might be pregnant. Her lover went to a druggist, who sold him six 7.3-grain bichloride tablets. and told him to "use" them. The tablets were inserted into the patient's vagina. Intense pain was the result, and the patient could not extract them on account of muscular spasm. About half an hour later a physician arrived and administered vaginal douches of warm water, but failed to find any remnants of a tablet. Within a few hours symptoms of acute mercurial poisoning set in, and the patient died on the fourth day. Dr. Schildecker discovered all the signs of necrotic exfoliative enterocolitis, very advanced, in the rectum, yet traceable as high as the duodenum. The mucosa and muscular tissue of the vagina and vaginal portion of the cervix were necrotic, and necrosis had attacked the Fallopian tubes, ovaries, and broad ligaments, yet spared the endometrium, muscular wall, and serous coat of the entire body of the uterus above the os internum. Thus the chemical irritant had been carried to the uterine appendages, and, further, round by the lymphatics, and not straight along the uterine cavity and tubal canal. There were no signs of peritonitis, but the peritoneum in the posterior part of the pelvis was separated from the underlying tissues by a collection of about 10 ounces of clear serum.

In the second and third cases the patients were young married women, who introduced the tablets in order to prevent conception. As in the first instance, both patients attempted to remove the tablets on account of the burning pain which rapidly followed their introduction, and both failed. The second was treated by continuous enteroclysis, and seemed convalescent at the end of a fortnight, when she died in a state of collapse. A perforation was discovered in the descending colon, with signs of gen-In the third case the eral peritonitis. physician arrived within twenty minutes, and immediately gave intravaginal injections of hot water, and, as soon as possible, hot milk. Continuous enteroclysis was then practiced, and the patient seemed to be doing well until the third day, when tremors developed, followed by paralytic symptoms. She died at the end of the first week.

These cases show that absorption of bichloride tablets take place through lymphatics, and is exceedingly rapid; within twenty minutes a lethal dose can be absorbed. The reflex spasm preventing the patient from extracting the tablet is a phenomenon to be remembered. Apart from noting the ethical fact that none of the three patients had any business to introduce tablets into the genital canal, the author points out the evils which may be caused by criminally careless druggists and ignorant friends advising the "use" of these preparations without any warning as to their dangers.

# EDITORIAL.

## THE RELATIONSHIP BETWEEN PATH-OLOGY AND THERAPEUTICS.

Many years ago when our knowledge of the processes of disease rested largely upon post-mortem observations, the employment of remedial measures necessarily depended solely upon experience, and the deductions from this experience were, for obvious reasons, often erroneous. The advances which have been made in the study of abnormal physiology or pathology have, however, given us much clearer conceptions of the conditions which exist in living patients, and while erroneous deductions may still be reached, nevertheless the application of drugs has become more rational and less empirical. There is not space in this editorial to discuss in detail the large subject indicated by its heading, but ultimately, as our knowledge of disease becomes wider and deeper, we will doubtless look back to many of our present methods and consider them as crude as the methods employed by our forefathers.

One of the great advantages possessed by a physician who has opportunities for a large hospital practice is that he studies patients with instruments of precision and, from time to time, obtains autopsies which give him valuable information as to what he ought to do in other cases that come under his care. Such post-mortem observations, combined with a study of the symptoms of disease presented by the patient during life, instead of making him a therapeutic nihilist, will, on the contrary, give him increased confidence in the principles of treatment which he institutes. Thus, a physician who employs certain measures in the treatment of croupous pneumonia, and who nevertheless loses his patient, may reach the conclusion that his methods were erroneous, or that the drugs which he employed were without value, because they failed to maintain the action of the heart when the patient's recovery depended solely upon the proper performance of its func-

tion by this viscus; but at autopsy he finds 'that the real cause of cardiac failure was the development of an ante-mortem clot. the prevention of the development of which is beyond our skill and the occurrence of which necessarily involves a fatal termination. Such an investigation does not throw doubt upon the value of treatment in cases which do not present this fatal complica. tion, and shows him clearly that the death occurred through no fault of his. A very large number of instances of a similar character could be cited, as, for example, the condition of the kidneys in parenchymatous nephritis, in which disease the autopsy will not throw doubt upon the plan of treatment but rather cause amazement that life could have been maintained for so long a time.

In this connection we have read with much interest an article contributed to the American Journal of Medical Sciences for December, 1911, by Brooks, upon the presence of myocardial changes in endocarditis. For many years medical men have recognized that the prognosis in endocarditis involving the valves depends not so much upon the deformity of the valves as upon the ability of the heart-muscle, by increased work, to compensate for the leak which the deformity produces. Any myocardial degeneration of course impairs the ability of the heart muscle to do extra work. Brooks's paper emphasizes the fact, too often overlooked, that myocardial disease of greater or less degree is practically always associated with endocarditis. We all know how frequently mitral stenosis is associated with a lesion which extends from the valves into the fibers of the bundle of His and adjacent parts, and this is probably one of the reasons why the prognosis in cases of mitral stenosis is so bad. The myocardial changes, in these instances, may be originally inflammatory in nature, but as a rule they are ultimately of a distinct degenerative type, and in these degenerative cases the muscle suffers not so much by extension

of the endocardial inflammation as by reason of the fact that the microörganisms, or the poisons, which, on the one hand, cause valvular disease, simultaneously affect the muscle fibers. This degeneration is commonly of the fatty type in its terminal characteristics, succeeding the primary parenchymatous alterations, and ultimately, of course, the fatty degeneration is followed by fibrous replacement and the brown atrophy so commonly met with at autopsy.

It will be seen at once that a recognition of these facts not only governs prognosis but also governs treatment, not so much because it directs what drugs shall be used as because it indicates that there are limits to therapeutic possibilities. Given a valvular lesion and a tired heart which has become nearly exhausted in its endeavor to keep up compensatory action, it is manifest that rest in bed and suitable doses of digitalis and arsenic may do much good; whereas, on the other hand, if the degenerative changes in the myocardium are considerable, these remedies of necessity can be of little advantage. Although there is no means of absolutely determining how far degenerative changes have progressed during life, nevertheless a knowledge of the severity of the illness which has produced the lesions at least points to the degree of their development, and where there is reason to believe that the muscle changes are marked, remedies may be used with the hope that they will do good, but with the recognition of the fact that too much cannot be expected of them, and therefore, when they fail, the physician must not be cast down and disheartened. On the other hand, it is equally important that the physician should not protect himself from the criticism of his own conscience by believing that he has exercised his best efforts unless he also feels that he has studied his case with so much care and is so well equipped by the study of diseased processes in general, that the chances are against his having made any mistake in prognosis, diagnosis, or therapy.

# THE CUTANEOUS REACTION IN SYPHILIS.

Although the diagnosis of disease is, strictly speaking, a department of medical study which does not have a place in a journal devoted to therapeutics, nevertheless diagnosis is so intimately connected with treatment, when a specific infection is present, that any advance which makes diagnosis more certain and therefore treatment more accurate is worthy of our considera-The Moro reaction with tuberculin and the reaction of von Pirquet to the same agent have proved themselves useful in a limited class of patients, chiefly children. That they possess all the advantages which were ascribed to them when first introduced is questionable. The same failure to give us the information which we desire may be developed in future in connection with a cutaneous reaction described by Noguchi in the Journal of Experimental Medicine of December 1, 1911. This investigator, whose name is so familiar to all those who have studied the literature of syphilis during the last ten years, records his investigations along this line. Preparing an emulsion, or extract, of pure cultures of the treponema pallidum to which he has given the name "luetin," he has applied this to the skin of many individuals in different stages of syphilitic disease with interesting results. The luetin produces a cutaneous reaction in syphilitic and parasyphilitic patients which is most constant and severe in tertiary and hereditary conditions, and is comparatively rarely present during the primary and secondary stages of the malady. Indeed, in the Noguchi series of cases of late syphilis it occurred in practically 100 per cent, and in 96 per cent of hereditary syphilis. Where the treatment has been very energetic and signs of syphilis are absent the reaction may be quite marked even in the primary and secondary stages; whereas it is often absent if treatment has not been instituted. Noguchi makes the additional interesting statement that this is also especially true in the cases treated with

salvarsan. That cases under active treatment should react better than those which are not treated is noteworthy. He has also found that mothers who have young syphilitic children usually give the reaction, although they may present no evidences of syphilis. On the other hand, it will be remembered that the Wassermann reaction is fairly constant in primary and secondary syphilis, and is directly and immediately affected by antisyphilitic treatment in the sense that its occurrence is diminished. Noguchi's communication is only a preliminary one. He promises us further information along these lines, and it is to be hoped that a test so readily employed will prove reliable.

# THE SAFETY OF CHLOROFORM IN LABOR.

It has long been known that the highest mortality from the administration of chloroform as an anesthetic has occurred when this drug was employed by dentists, not necessarily because this class of practitioners is less skilful in its use, but probably because the drug was commonly administered when the patient was in the sitting rather than in the prone position, and therefore the fall of blood-pressure, which is so characteristic of the early influence of chloroform, exercised a greater effect upon vital centers. Conversely, it has been universally recognized that the mortality rate from the use of chloroform during parturition is extraordinarily low. It has been thought by some that this was due to the fact that less chloroform was used, and by others that the immunity of the parturient woman depended upon the fact that hypertrophy of the heart, which is supposed to develop during pregnancy, acted as a protective; but these two reasons seem hardly adequate, since the chloroform is often given to the parturient female by unskilled hands while the physician is busy with the delivery. Further, it is a question whether there is any actual hypertrophy of the heart in pregnancy which would enable it to resist chloroform. Finally, it has been pretty well proved that, except in cases of myocardial disease, chloroform does not produce death by its direct action upon the heart. It would seem that a more reasonable explanation for the immunity of this class of patients to chloroform depends upon the fact that the patient does not take it constantly, and furthermore that each succeeding pain acts as a distinct stimulant to the vasomotor center which is ordinarily much depressed by this drug, it being well known to physiologists that pain produces a marked rise in blood-pressure.

That death does occasionally ensue from the use of chloroform in labor must, of course, be recognized, and a case of this character has been reported in the Atlanta Journal-Record of Medicine for November, 1911, by Hodgson, who records the case of a woman of 24, a primipara, who was delivered by the aid of forceps. She had been in hard labor for some time. what was apparently a moderate amount of chloroform had been used the patient stopped breathing, just as the head passed over the perineum, and all efforts at resuscitation failed. There is no record of an autopsy to reveal the condition of the heart, but it is said that the patient had the appearance of a normal, healthy woman, and that at no time was she very deeply under the influence of the anesthetic.

# THE ABORTIVE TREATMENT OF GONORRHEA.

From time to time there appears in current literature a somewhat enthusiastic advocacy of the abortive treatment of gonorrhea, usually based on the report of very few cases, and at times uncontrolled by microscopic and bacteriological investigations. The basis of this treatment has usually been an extremely irritating injection which is supposed to supplant by an acute chemical inflammation the cellular tissue reaction due to the multiplication and spread of the gonococci, and to eliminate the latter from the urethral mucosa in the process of desquamation and exfoliation and exudation, the latter presumably exerting a gonococcicidal effect. In reviewing this subject Montfort (Revue Clinique d'Urologie, January, 1912) notes that in the abortive treatment the medicinal agents most employed are potassium permanganate, silver nitrate, protargol, and argyrol.

Guiard more than ten years ago contributed an apparently convincing article as to the value of copious irrigations with potassium permanganate, using strengths varying from 1:10,000 to 1:6000 repeated twice daily for four days and thereafter for once daily in quantities somewhat over a pint, after preliminary cocainization of the urethra. Of those who came to him with discharge of less than a day's duration 87 per cent were cured. When the discharge existed for two days 83 per cent were cured; for three days, 60 per cent; for four days, 25 per cent. The treatment lasted for from four to eight days.

Lebreton three years ago reported nine cases seen within the first twenty-four hours of the discharge, all cured by copious irrigation of 1:5000 potassium permanganate practiced twice a day for four days, the patient using the same solution with a hand syringe every four hours between times. After the fourth day single daily irrigation was given and two injections. This treatment lasted for from three to fifteen days. Further experience showed the treatment almost equally efficacious in his hands.

Motz reported last year upon 186 cases, 48 of which were cured in less than ten days; 66 in less than fifteen days; 47 in less than twenty-one days; 2 within four weeks, 2 within five weeks, 3 for a longer period than five weeks. The potassium permanganate was preceded by an injection of between half a drachm and a drachm of 2-per-cent silver nitrate, which was kept in the anterior urethra for two minutes. Twelve hours later the anterior urethra was copiously flushed with permanganate solution 1:1000. The second, third, and fourth day there was a permanganate flushing of 1:2000 in the morning; in the evening, after cocainization of the urethra, a urethro-vesical flushing of 1:2000 to 1:3000. On the fifth day and thereafter a

single irrigation of both urethras with potassium permanganate 1:2000 to 1:3000 was done, continuing this washing until all secretion disappeared and the first urine was absolutely clear. The particular advantage he claimed for his method was not only the promptness of cure, but the entire absence of all complications. He advised, however. careful selection of those to whom this treatment might be applicable, rejecting cases of discharge of more than six days' duration, those exhibiting a red and swollen meatus or abundant discharge, marked ardor urinæ, or hypersensitiveness of the urethra, or cloudiness of the second portion of urine passed.

Engelbrecht injected one pint of onehalf-per-cent silver nitrate solution with about four feet of pressure into the anterior urethra, previously cocainized, subsequently cauterizing the mucous membrane and navicular fossa with 3-per-cent solution. Four hours later the urethra was again cocainized and a second lavage of one-fifth-percent silver nitrate was given. This ended the treatment. Of 30 cases, 26 were cured at once; four recurred.

Moran reports on this method favorably, and Montfort observes that in six cases offering the indications for treatment he had three successes and three failures.

Stockmann advocates the employment of protargol in doses of 4, 5 and 6 per cent, with 4-per-cent glycerin and 5-per-cent antipyrin added, introduced by means of a kind of instillator into the neck of the bladder. The injection is held in for from twelve to fifteen minutes. The treatment is repeated every third day whether the gonococci have disappeared or not, and the patient uses a weak hand injection of protargol one-half to one per cent. Of 100 cases submitted to this treatment, in 38 the gonococci had disappeared from the first treatment; in nine cases after eight days; in fourteen cases after two weeks.

Carle also uses protargol in two- or oneper-cent solutions, the patient giving himself the treatment three times a day and holding the solution in from three to ten minutes. This treatment is continued for twelve days. Two injections a day are given. All treatment ceases after the fifteenth day. The injection is not stopped even in cases complicated by posterior urethritis, cystitis, or prostatitis. When the anterior urethra is acutely inflamed ichthyol is ordered in one-per-cent solution, held in for two minutes three times a day. Statistics are not given, the author simply stating he has had excellent results.

De Sard employs a 10-per-cent solution of argyrol, 2½ drachms at a time, held in for six minutes, and repeated once daily.

Janet employs two lavages a day during the first two or three days—1:2000, and 1:4000 thereafter from two to six days. He uses, also, a hand injection in strengths varying from 5 to 20 per cent. In successful cases the disease clears up in five to seven days. In the most unfavorable cases the duration of the treatment is less than a month. In 26 cases treated he has cured 17.

There is a general consensus of opinion as to the value of irrigations, and in cases of total urethritis the importance of making these washings total. It is evident, however, that the hand syringe has by no means been thrown away, nor have balsams by the mouth fallen into popular disfavor.

#### GONOCOCCAL ARTHRITIS.

Among the most troublesome affections with which surgery has to deal are the deforming and crippling arthritic lesions, often gradual in onset, slow in progress and singularly resistant to treatment, dependent upon chronic gonococcic infection. Although this form of arthritis is often monarticular, it is by no means invariably so,

and at times produces not only permanent crippling, but in addition chronic invalidism incident to subacute inflammatory attacks. The diagnosis of the gonococcic nature of the infection is dependent primarily upon finding the focus of infection, as is also the treatment. The arthritis does not differ clinically in itself from any of the other forms of persistent and chronic infection.

The usual focus in the male is the seminal vesicle or the prostatic urethra, often unsuspected and undetected, since these chronic inflammations may persist for years and give practically no localizing symptoms. In the female the usual focus is the cervix. From the diagnostic standpoint the complement fixation test is the most promising one that has yet been practiced. The principle is precisely that applied to the diagnosis of syphilis, and the findings are apparently even more dependable.

As to the treatment of these chronic gonococcic joint infections little is accomplished by local means. The remarkable results achieved by Fuller incident to extirpation of diseased seminal vesicles indicate the efficiency of ablation of the focus of infection. Results less striking, but often entirely satisfactory, are at times achieved by massage and irrigation when the vesicles and the prostatic urethra are the seat of infection. In certain cases the injection of vaccines has proven almost miraculous. Stock vaccines have generally been employed, but where this is possible an autogenous vaccine is decidedly to be preferred. The application of heat, pressure, and counter-irritation, and the giving of formalin injections, are carried out on the principles applicable to chronic arthritis in general.



# REPORTS ON THERAPEUTIC PROGRESS.

## THE TREATMENT OF THE VACCINA-TION SITE WITH PICRIC ACID SOLUTIONS.

The London Lancet of November 18, 1911, contains an article on this subject by SCHAMBERG and KOLMER. These are their conclusions:

- 1. The use of a 4-per-cent alcoholic solution of picric acid upon the vaccinated area forty-eight hours after the insertion of the lymph does not interfere with the success of the vaccination.
- 2. It is believed that this treatment lessens the degree of the local inflammatory reaction.
- 3. It is believed that the patients are not so apt to exhibit constitutional disturbance.
- 4. The epithelial covering of the vaccine lesion is hardened, and there is a decreased liability of extraneous bacterial infection. This is doubtless due in part to the antiseptic properties of the solution applied.
- 5. It has been determined by laboratory investigation that picric acid is about four times as efficient as phenol as a local antiseptic.
- 6. The common organisms on the skin are lessened in number by the application of solutions of picric acid.

# THE SURGICAL REQUIREMENTS OF NARCOSIS AND THE AVAILABLE METHODS.

BUXTON in the British Medical Journal of November 4, 1911, in writing on this subject reminds us that a class of cases which are difficult to manage is that which includes goitres and glandular growths pressing upon or displacing the trachea. Involvement of the laryngeal nerves increases the danger. There is a complication in goitre cases which is sometimes lost sight of—the tendency these patients have to profuse secretion both from the salivary and tracheal glands. When the thyroid enlargement is associated with the other symptoms of Graves's disease the acme of danger is attained. Chloroform used by the

older methods led to, or was associated with, a high mortality, and this led Kocher and others to extol the merits of local injections by Schleich's infiltration method. This plan, admirable though it is in small adenomatous cases, fails to remove one grave factor causing fatality-it does not abrogate either traumatic or psychic shock. Nitrous oxide, even with oxygen, causes too much turgescence, and increases respiratory difficulties. With ethyl chloride the patient is either too deeply or too lightly narcotized: the level of anesthesia can hardly be maintained. Ether given by closed methods undoubtedly increases turgescence, and provokes increase of saliva and mucus. which interfere with breathing. Mrs. Dickinson Berry, who has used an open ether method largely in these cases, insists that with care it can be safely and advantageously employed.

The safest method if ether is used is to inject atropine gr. 1/100, or this together with morphine and scopolamine, half an hour before giving ether by the open method. In this way a certain diminution of the bronchial secretion can in some cases be obtained, but in the experience of the author this dose of atropine will not always prevent salivation, and if it does, it is liable to cause discomfort for hours, owing to the dryness of the mouth and pharynx.

The author has given anesthetics to a large number of cases of goitre, both simple, malignant, and exophthalmic, and has used chloroform in low percentage vapor with a copious stream of oxygen. This plan has so far answered extremely well, and possesses the great advantage that one can readily lighten and deepen narcosis as the steps of the operation demand. Although he has never employed rectal etherization for these cases, he has done so for laryngectomy, but the plan, valuable as an alternative, has inherent objections which make it less useful now that we possess accurate means of giving chloroform in definite percentages.

# A SIMPLE AND EFFECTUAL MEANS OF ADMINISTERING SALVARSAN.

In the Indian Medical Gazette of October, 1911, Fowler states that finding the ordinary procedure that is recommended very tedious and troublesome, he tried the mixture of salvarsan with olive oil, and was surprised at the results. The local pain was practically nil, and the patients improved rapidly under the treatment, as is recorded by the injection of salvarsan in saline solution. The procedure adopted is as follows: A Roux's syringe with a short needle of fairly large bore is sterilized by boiling in water. An ounce of pure olive oil is boiled in a small aluminum basin, and the oil is allowed to cool, or if one is in a hurry the basin is put into some cold water.

Two cubic centimeters of oil is drawn up in the syringe with the needle on—the piston is drawn well up to the top and the oil is shaken up, so that the oil adheres to the sides of the glass barrel. The piston is then completely drawn out, a finger being placed on the point of the needle (which is lowermost), so that the oil may not run out; next the salvarsan is thrown into the barrel, and 4 Cc. of oil is poured on the salvarsan direct from the aluminum basin. The piston is then replaced, and as soon as the washer engages the barrel, the syringe is turned up, so that the needle is uppermost. The screw-cap which is on the piston rod is then pushed up and screwed home, and the syringe is violently agitated.

The salvarsan mixes with the oil and forms a uniform emulsion. This is injected intramuscularly into the gluteal region.

The points that should be noted are:

- 1. The piston of the syringe should not be of metal. The syringes supplied for salvarsan injections by chemists are unsuitable for this purpose as the acid salvarsan attacks the metal and the piston jams.
  - 2. The needle must be of wide bore.
- 3. Care should be taken when the piston is being replaced, the glass barrel being held firmly in its metallic casing with the left hand. The author advises those wishing to try this method to practice it with some simple oil.

4. There should be no hurry in the mixing, as the whole of the salvarsan will mix up with the oil. He has had no caking of the salvarsan in the syringe.

The elaborate method recommended for the use of this wonderful remedy makes it impossible for the ordinary medical man to administer the drug, but the method suggested is one that can be tackled by any average physician. The author injected eight cases recently by this method and has had excellent results.

# HYPODERMIC INJECTIONS FOR THE SECONDARY ANEMIA OF CHRONIC PULMONARY TUBERCULOSIS.

BARLOW and CUNNINGHAM in the Journal of the American Medical Association of October 28, 1911, state from their experience that the following conclusions seem justifiable:

- 1. The subcutaneous or intramuscular injection of sterile solutions of arsenic or iron, or of the two in organic combination, is entirely practicable in the treatment of the tuberculous in sanatoriums.
- 2. The effects of such medication are seen chiefly in the changes in the blood and in the body weight.
- 3. The preparations of iron seem to affect the hemoglobin content more profoundly than they do the number of red blood-cells.
- 4. The preparations of sodium cacodylate and of atoxyl seem to affect the number of red cells more markedly than the hemoglobin.
- 5. These solutions are in no sense specifics against the tubercle bacillus, but seem to exert a general tonic or alterative action within the organism.
- 6. The use of these preparations is entirely safe and not attended with danger to the patient, even when continued over a period of many months.
- 7. Relatively larger doses are borne when given thus than are tolerated when given by the mouth.
- 8. The dosage is capable of exact control, and the amount of the drug absorbed is known definitely.
  - 9. The body weight is more rapidly and

more certainly raised when these preparations are employed than when the unassisted hygienic-dietetic form of treatment is maintained.

10. There is no demonstrable increased liability to pulmonary hemorrhage accompanying the use of these preparations in pulmonary tuberculosis, even with advanced cases and in the presence of progressive destruction of the lung.

# VACCINE THERAPY IN ACUTE RHEU-MATIC POLYARTHRITIS.

WOLVERTON in the Medical Record of October 28, 1911, admits that six cases do not form a large series from which to draw conclusions; but all his cases were of a very severe character, and the response to the exhibition of streptococcus pyogenes vaccine was in every case so prompt and satisfactory that he has felt impelled to report his cases and to urge others to give the remedy extensive clinical trial. Moreover, in at least four of the six cases, the salicylate treatment was not followed; and in two cases the patients grew worse in spite of faithful adherence to salicylate treatment. So the uniformly good and prompt results must be ascribed to the vaccine. In every case the temperature quickly fell, there was a rapid cessation of pain and disappearance of signs of inflammation. The patients, moreover, remarked a feeling of exhilaration, or stimulation, which came on in from three to forty-eight hours after the inoculation. In no case was there any evidence of a harmful negative phase. In none of the six cases above reported did any cardiac valvular lesion develop subsequent to the employment of the vaccine.

Considering the unsettled nature of the question as to the specific etiological microörganism in this disease, it seems not unwise to the writer to employ a mixed vaccine, containing streptococcus pyogenes and staphylococcus aureus et albus, rather than the streptococcus alone. However, the plain streptococcus vaccine used in the cases reported above left nothing to be desired.

The vaccines employed in the treatment

of these cases were all "stock" vaccines, made from several strains (at least six, he believes) of streptococci, obtained from various cases of streptococcic infections.

#### THE FEEDING OF BABIES.

Spriggs in the Clinical Journal of November 1, 1911, writes on this topic and says with regard to the food that there are three things to do: First, find out what the baby will keep down; next, increase gradually the amount of the food which the child will tolerate; and last, pass gradually from this to a normal diet. If the child is on a certain feed of milk and water, and has not been sick but is marasmic, do not change it, but go on increasing its quantity and strength. If the child has been sick one will find it an advantage to try the modification of milk, using first citrated and then peptonized milk. If there is still sickness, milk should be replaced by albumen-water or by whey. Albumen-water is made by putting white of egg to water, in strength varying from two to six eggs to a pint of water. The writer does not think there is any disadvantage in using the white of six eggs to the pint of water with a little salt. Sometimes a little brandy is put in, but most infants are as well without that. Be sure it is filtered, and that the albumen is broken up, so that there are no flocculi produced in the child's stomach. Often the child will retain this when it cannot take milk at all. Such treatment will change the flora of the intestine, the vomiting and diarrhea ceasing as a result Whey has a different character, consisting chiefly of lactose. The caloric value of whey is about one-third that of milk. One must try these various foods, passing from one to the other without undue haste or delay.

He speaks of a case of a child of two months which was about 6 pounds in weight when it was born. It was tried with milk and water, but rejected it. It was then tried with peptonized milk, and it rejected that. When the statement is made that he tried it, the writer does not mean for one

feed, for that is not trying it, but for two or three feeds at least. Then it was given whey and that was kept down well. He then wanted to increase the food value, and cream was added to it. That did not suit the baby at all; it began to vomit as soon as it had the food to which cream had been added. Therefore the cream was omitted and peptonized milk was added, putting in first a few drops, and then an increasing quantity of peptonized milk. It was then gradually led to a normal diet of milk, water, and lactose corresponding with the age of the child.

Sometimes neither whey nor albumenwater suits a child. One may then give meat juice, either fresh meat juice made in the way described in the hospital pharmacopæia or veal tea. It may be asked why veal instead of beef? More soluble protein is obtained from veal than from beef, and veal tea is often better borne. It is made in the same way as beef tea. It is well borne by children. Often one can add to its value by putting cream in it, and can keep the child going very well for some days, afterward leading it back to milk again.

There was the case of another child who was fed on citrated milk and water and lactose. That failed. It was then put on meat juice, which it kept down. This was then mixed with whey, and gradually it passed from that to peptonized milk and lactose mixed with it, the time of peptonization being gradually reduced until it was taking ordinary milk mixed with water and lactose. The physician must try all these dodges, and not be afraid to go back again if a change is unsuccessful. Often if one solution does not suit the child a weaker solution may. On the other hand the opposite is sometimes the case. For instance, the writer asserts he has seen children on three parts of milk to one of water vomit, but take peptonized milk or food made from dried milk and keep it down well, getting much more nourishment in a smaller bulk. Sometimes it is the quality of the food which annoys the stomach, sometimes it is the bulk of it. We should not let a preliminary fall of weight be discouraging if the child is taking its feeds. In a number of the sixty-one cases which the author has observed the weight fell at first, but rose afterward. But the opposite may happen; it may go up for a few days and afterward it may fall again. If it is a weakly child it is well for it to cry lustily once a day, because some of these children get atelectasis. Dr. Holt recommends that a marasmic infant should be made to cry daily by smacking; or it may be dipped into cold water, then into warm. The contrast will cause it to cry lustily.

As to medicines, it is wise in gastrointestinal derangement to give a little castor oil at first to clear out the canal, and afterward half a grain to one grain of mercury with chalk if it is a well-nourished child three months old. For a little infant a quarter of a grain is enough. If the infant is in extremis, give it a bath in which is placed some mustard, and inject saline solution under the skin or into the peritoneal cavity.

## QUININE AND UREA HYDROCHLOR-IDE AS A LOCAL ANESTHETIC.

BOYD says in the *Medical Record* of October 14, 1911, that he has reached these conclusions:

(1) In a few of his first cases the author commenced his operation before the part was completely anesthetized. He would suggest that an interval elapse of at least ten to twenty minutes. (2) Postoperative anesthesia lasted on an average three days. (3) No dermatitis followed its use. (4) It is less expensive than cocaine. (5) It is soluble in both alcohol and water. (6) It has a very decided hemostatic effect. (7) There has been some induration in the majority of his cases. At the end of three months this had disappeared in nearly all of them. (8) Some cases have been reported in which the salt was successfully used in major operations. Thus far he has used it only in minor operations. (9) Any operation usually done with cocaine can be done with this anesthetic. The technique is precisely the same.

# THE EFFECT OF SPARTEINE AND ADRENALIN INJECTIONS ON THE KIDNEY OF THE RABBIT.

CHRISTIAN, SMITH and WALKER in the Archives of Clinical Medicine of October 15, 1911, report an exhaustive study on this subject.

Walker and Christian have described the production of cardiac lesions—myocarditis, pericarditis, endocarditis—in rabbits by the injection of sparteine sulphate (0.01 to 0.04 gm.) and adrenalin chloride (0.1 to 0.2 Cc. of a 1:1000 solution). In some animals the sparteine was given subcutaneously and the adrenalin intravenously, but in most cases both drugs were injected intravenously. The authors have examined the kidneys from twenty-nine of these animals.

Macroscopically the kidneys did not show any departure from the normal except in occasional instances when they appeared injected. This injection did not bear any apparent relation to the cardiac condition, but was evidently independent of it. Microscopically no lesions were found which in any way could be associated with the injection of the drugs. A few of the animals showed some spontaneous lesions, as the writers have mentioned in connection with studies on the kidneys of rabbits which received uranium nitrate and other kidney irritants. These spontaneous lesions occurred in rabbits autopsied from one hour to two or three days after the injection of sparteine-much too soon for any causal relation to exist between the drug and the histological finding in the kidney. chronic lesions consisted of a slight connective tissue increase-in one or two instances with some dilatation of the renal

Nearly all the sections showed a marked injection of the vessels, especially those of the glomeruli and medulla. Sometimes only the vessels going in from the cortex were markedly congested. In some of the kidneys this condition was extreme, making the whole section appear very red under the microscope. In no case, however, was it possible to find any evidence of the break-

ing through of the blood into the spaces without the vessels. Apparently simply an unusual amount of blood was present in the vessels at the time of death. An attempt was made to match up the more bloody sections with the more severe cardiac conditions, but no constant relationship was found. In some instances, however, the kidney sections of animals dying in convulsions were greatly injected, but even this was not an unfailing condition.

No test of kidney functions was made with these animals.

So far as this study goes it supports the statement made by Fleisher and Loeb that injections of sparteine and adrenalin cause no lesions in the kidney.

## THE TREATMENT OF PLACENTA PRE-VIA AT THE SLOANE HOSPITAL FOR WOMEN.

CRAGIN is quoted by the Medical Record of October 14, 1911, as reporting cases of placenta previa occurring in 25,000 consecutive deliveries. For discussion of treatment they were divided into two groups, namely: Series A, those occurring in the first 20,000 deliveries; and Series B, those occurring in the last 5000 deliveries. Series A the cases of placenta previa were treated by different methods: By Braxton-Hicks' version and using the half breech as a uterine tampon, or by tamponade of the cervical canal and vagina, or by dilatation of the cervical canal by the Voorhees bags. In Series B the methods of procedure in cases needing any treatment save that of a normal delivery could well be summarized as follows: (1) Dilatation of the cervix and control of the hemorrhage with the largest Voorhees bag which could be introduced i.e., No. 3 or 4. (2) After the largest bag had passed the cervix and good dilatation was obtained, either a version was done and the child delivered by the breech, or if the placenta previa was lateral, or in some cases even marginal, with slight hemorrhage, and the vertex was presenting, the membranes were ruptured and the head was allowed to come down and exert pressure on the lower uterine segment and the edge of the

placenta, the delivery being expedited by the forceps if necessary. This use of the elastic bag was extraovular, the membranes being kept intact until the bag passed the cervix and good dilatation was obtained.

The first question of importance in any method of treatment was the maternal mortality. In Series B, treated by the present methods, there were forty-nine cases of placenta previa, fourteen of the complete and thirty-five of the incomplete variety. There were two deaths among those of the complete variety, or 14.2 per cent, and two deaths in the thirty-five in the incomplete variety, or 5.7 per cent. In Series A, treated by different methods, there were thirty-nine cases of complete placenta previa with nine deaths, or 23 per cent, and 135 cases of incomplete placenta previa with eleven deaths, or 8.1 per cent. As regards fetal mortality, in Series B, treated by present methods, the total fetal mortality was 51 per cent, while in Series A it was 60.3 per cent. In Series B 63.1 per cent of the children viable on the admission of the mother left the hospital alive.

Regarding the question of placenta previa being an indication for Cæsarian section, he could only state that he had never met with a case in which he had considered it indicated. He believed that the indication occasionally arose. He had recently performed it in a case of accidental hemorrhage with long, rigid cervix, with profuse hemorrhage, and believed that similar conditions in a placenta previa might well indicate the same operation. That Cæsarian section was often indicated in placenta previa he did not believe.

# SOME POINTS IN THE TREATMENT OF EPILEPSY.

The Journal of Mental Science for October, 1911, contains an article by Collins on this topic based on his institutional experience.

The author has no new treatment to bring forward, but has thought it might be of interest to present a few results of the present methods. He divides his remarks under the following headings: (1) Colony life; (2) dietary changes; (3) the bromides; (4) salts of calcium; (5) opium; (6) digitalis.

The colony treatment in his opinion is ideal. The almost complete absence of restriction of liberty within a certain area. the open-air employment and other forms of employment which are interesting, avoid a great deal of the trouble so constantly found in asylum life amongst this class of patients. There is always a great physical improvement in the people who are in the open air, as far as weather will permit, practically all day. Each villa is built for thirty-eight people, who are in charge of a married couple assisted by one other attendant, and each attendant takes a farm party of about twelve; ten remain in the villa in the morning to do the cleaning, and a tailor's shop, boot shop, weaving and upholstering, and clerical work in the stores are all utilized for the employment of col-They have no airing court, and there is no fence to the grounds, but parole and observation work satisfactorily, and escapes are very few. The women, of whom there are sixty, do laundry and kitchen work and mending, and also make the clothing required. It was thought, however, that it would be advisable to have one villa with an enclosed garden, so that all types of epileptics could be admitted for trial, and a new hospital villa of the most recent type to accommodate fifty acute patients has just been erected and will shortly admit patients.

With regard to changes in dietary, the author's results are somewhat contradictory. In May, 1907, the quantity of meat given per day was halved (from 5 to 2½ ounces), and puddings were given. From January 1 to April 30, 1907, 9981 fits are recorded, and from June 1 to September 30, 8680 only. This works out at a reduction of 13 per cent, but remembering that in the later months the weather is finer and more time outdoors is possible, perhaps this might unduly favor these months. For comparison he also took the period January 1 to April 30, 1908, and finds 7916 fits only.

On the contrary, he finds less fits per night after a meat dinner than after fish, the difference, however, being trifling. These results are in favor of a reduction of meat, but apparently not of its complete absence, and when one considers the monotony of the purin-free diet, its results seem hardly worth the inconvenience to, and discontent of, the patient. These remarks refer only to chronic patients, however, and in more recent cases there is no doubt that the diet makes a great deal of difference in some individuals.

The effect of the bromides is variable. some patients being quite unable to do without them, while others cannot take them in any form, even when salt is eliminated from the diet and the dose is small. The author believes that the epileptic fit is reflex in origin, and that the bromides act by raising the resisting power of the braincells to external stimuli. For this reason their use is always fraught with danger to the mental activities of the patient, and one cannot help wishing that the bromide treatment was less extensively used during childhood. He has noted the following bad effects from bromides: Great physical reduction, hallucinations, malaise, stupor, degraded habits, edema and cardiac debility, a general lowering of the resisting power to disease, so that sudden changes in the temperature are very likely to be followed by bronchitis and pneumonia. On the other hand, in chronic epileptics who have been on bromide for many years the omission of the mixture has in many cases been followed by one or more of the following results: Increase in the number of fits, and also in their severity. Two cases sprained an ankle during the fits, and in one ecchymosis of face and neck occurred. Attacks of mania, and a greater degree of malaise following the fits, also were noted. In one case, a female who had been taking strontium bromide gr. xxx twice daily for several years, the bromide was omitted because she had an attack of pleurisy with effusion. A slight increase of minor attacks occurred as she got better, but after getting up and when convalescent she had 129 minor attacks in a week. Potassium bromide gr. xxx twice a day stopped these very soon. A few cases are quite uncontrollable without bromide from mental excitement, contradicting some who are more irritable when they have no fits. In several cases no evil results have occurred, but physical and mental benefit have ensued.

In some cases bromide abolishes the aura of the fit, and causes the patient to fall and injure himself in a way he did not do previously. In two cases with prolonged aura the writer has been able to avert fits for several months by simply giving a dose of bromide as soon as the aura is noted. In very many cases in which an immediate cessation of fits followed the exhibition of bromide its effect wears off, and the fits gradually begin to recur, and then a change of bromide will sometimes again cause a cessation of fits. He finds little difference in the two salts he has used principally, viz., strontium and potassium, except that from 1/2 to 2/3 dose of the potassium seems to have the same effect as the larger dose of strontium.

Calcium salt he has never tried. Little-john, at Hanwell, reported success, but Mann, writing in the Guy's Hospital Gazette, found it useless, and Lallment and Dupony, at the Asylum at St. Yon, in fourteen cases had one death, no benefit, and in many cases so bad an effect that the treatment had to be abandoned.

Opium the author is finding useful in two cases which are intolerant of bromide. But he has not yet been able to complete the treatment by heavy dosing of bromide afterward, so can express little opinion about it.

Digitalis he found very useful in a case which had a very large number of fits, and in which something like an 80 per cent reduction occurred, but in several other cases he has found it quite useless.

To sum up, the writer thinks that for the confirmed epileptic, colony life, a reasonable diet, and interesting employment in the open air, if possible, are the most satisfactory methods we have at present. Bro-

mides should not be given unless excess of fits, malaise, or excitement absolutely demands it. In the latter case bromides sometimes make colony life a possibility. He states he cannot help feeling that some epileptic dementia is bromide dementia, and not epileptic in reality.

In conclusion, he records the interesting case of an ex-soldier, aged twenty-eight, who has true nocturnal fits, after which he is violent and wandering for some twenty minutes or so; in the daytime he has attacks of minor epilepsy, in which he rushes forward as fast as he can go, striking out at everything in his way, smashing windows. etc., and struggling violently. His attacks may be often prevented by shouting his name in his ear the moment he shows the preliminary pallor. Syphilis is denied in this case. Fits began at twenty-six, after a kick on the head by a horse.

### TREATMENT OF DIABETES MELLITUS.

In the Journal of the American Medical Association of October 7, 1911, Hodgson says that the following are the objective points in treatment:

- 1. To free as nearly as possible the blood and other tissues from sugar; to do this it is necessary—
- 2. To find the individual patient's tolerance for carbohydrate and if possible to increase that tolerance.
- 3. To find a diet that will furnish the necessary calories without at the same time increasing the sugar intake.
- 4. To prevent, by dietetic or other measures, the constipation with which the majority of these patients suffer and which increases the toxemic condition.

The first thing to impress on the patient is the fact that this disease—in the class of cases under consideration—is one that possibly has been years in developing, and that it is useless and hopeless for him to expect to obtain any relief in a short time. The changes which a long-outraged system has undergone are such as cannot be remedied in a week or a month. In diabetes, more than in almost any other disease (unless it

is tuberculosis), the help and coöperation of the patient is absolutely essential to successful treatment.

Another fact to be emphasized is the futility of drugs in the treatment of this disease-futile, because harmful habits cannot be cured by drugs. A large percentage of the patients who present themselves bring with them their bottles of codeine. It is an unfortunate fact that many physicians still seem to harbor the belief that arsenic possesses virtues not to be found in the official preparations, and, moreover, that it has lost the dangerous qualities inherent in it. The author states he has seen so many patients with the codeine habit and aggravated cases of constipation superimposed on the diabetes, and so many with wrecked digestive systems due to the longcontinued use of arsenic solutions, that he utters a word of warning against the employment of these drugs.

Codeine and arsenic may have their uses in a limited number of cases, but in the great majority they should be left severely alone. If these drugs were merely worthless, there might not be any serious objections to their use, but they are a positive detriment, and their continued use lessens the patient's chances of recovery. Not only that, but whenever a drug is given to a diabetic he is usually less careful in his method of living than if he realizes that his recovery depends on diet and hygiene alone.

# FRENCH COMMISSION ON ANTITY-PHOID VACCINATION.

The Boston Medical and Surgical Journal of October 19, 1911, has this to say concerning this important subject, quoting from the report of the Commission of the French Academy of Medicine:

First: Antityphoid vaccination for several years has been applied with success in the English, German, and American armies. More than 100,000 persons have been inoculated either in their native country or especially in colonies where these soldiers were sent and where typhoid fever is prevalent.

Second: The benefits conferred by these preventive inoculations are revealed by comparative statistics of the typhoid morbidity and mortality, on the one hand, among soldiers subjected to the vaccinations, and, on the other hand, among the non-vaccinated. The former have presented a case incidence of typhoid fever of at least one-half that of the latter.

Third: Antityphoid vaccination does not accomplish the complete disappearance of this infectious disease in the communities where it is practiced, but it diminishes very notably its frequency. Moreover, such of the vaccinated who contract typhoid fever notwithstanding have much milder attacks than non-vaccinated subjects. The percentage of deaths supervening among the former is one-half that of the non-vaccinated typhoid patients.

Fourth: A single inoculation of bacillary vaccine assures a less efficacious protection than two or three inoculations. For vaccination by autolysates of living bacteria, four injections are made.

Fifth: Relative or complete, the immunity engendered by antityphoid vaccination appears to last from one year (Pfeiffer-Kolle vaccine) to four years (Wright's vaccine). It is therefore advantageous, if it is desired to prolong this period of immunity, to have recourse to revaccination.

Sixth: No matter which vaccine is used, antityphoid vaccination has shown itself to be without danger for the very numerous persons who have been inoculated. It appears that injections of vaccine of dead bacilli, while harmless in themselves, give rise to fever as well as painful local and general symptoms. These disappear in from twenty-four to forty-eight hours. The proposition has been made to employ the autolysate of living bacilli as an antigen. This vaccine is much better borne and causes little pain or none at all.

Seventh: As a precautionary measure, vaccinal inoculations should never be made during an epidemic nor in persons who certainly have been exposed within less than three weeks to the contagion of

typhoid fever. Preventive vaccination, therefore, should generally be undertaken before the usual time of the appearance of epidemics in localities and communities where they are habitually observed.

Eighth: For the same reason (that vaccination may cause a temporary predisposition to infection), and during the period immediately following inoculation, every person vaccinated against typhoid fever should take the strictest precautions to avoid the chances of typhoid infection by a careful watch upon the water that is drunk and the food that is eaten, as well as by rigorous personal hygiene and cleanliness. The period during which such precautions must be taken has a duration of two or three weeks at the most.

Ninth: In the army and navy, antityphoid vaccination is destined to render real service, more particularly in Algeria and Tunis, as well as in the colonies where typhoid fever is frequent and severe. When there are no cases of typhoid fever and no danger of an epidemic at the place of destination of soldiers and sailors, the inoculations may be undertaken upon their arrival. In the contrary event, the inoculations should precede by at least three weeks the arrival of these young men in the colonies where the disease exists in endemic form.

Tenth: No subject should be vaccinated in whom typhoid seems imminent or at the beginning of an attack, as vaccination may aggravate the disease. It should be practiced only upon perfectly healthy subjects, free from all organic or other defects and from local or general affections, no matter what their nature, especially in tuberculosis.

As a result of examination of these and other data, the commission reached the following conclusions, which were unanimously adopted:

There are grounds for recommending the voluntary employment of antityphoid vaccination as a rational and practical method of diminishing, by a sensible proportion, the frequency and gravity of typhoid fever in France and in the French colonies.

This recommendation is addressed to all whose profession, whose usual or accidental

methods of alimentation, whose daily or frequent association with the sick or with bacillus carriers, expose them to direct or indirect contagion by the bacillus of typhoid fever.

The groups of persons designated as likely to be particularly benefited by antityphoid inoculations are:

- (a) Physicians, internes, medical students, male and female nurses in military and civil hospitals.
- (b) Members of families in which bacillus carriers have been demonstrated.
- (c) Young persons of both sexes who have come from salubrious regions in the country to cities which are habitual foci of typhoid fever.
- (d) The population of cities where the latter disease is frequent.
- (e) Soldiers and sailors (rank and file) sent to colonies where typhoid fever is epidemic or endemic.

## REGULATION OF BLOOD-PRESSURE AND CARBON HYDRATE META-BOLISM BY MEANS OF THE CHROMAFFINE SYSTEM.

FALTA and PRIESTLEY, in the Berliner medicinische Wochenschrift of November 20, 1911, remind us that it has long been the belief that the chromaffine system has an important physiological and pathological significance.

Porges found that after extirpation of the suprarenal glands in a dog, the sugar content of the blood is reduced rapidly, and the blood-pressure sinks slowly. and Weisel have tried to explain the excessive tension in the contracted kidney as due to an increased production of adrenalin. It is doubtless true that there are cases of contracted kidney the blood-serum of which does not give the familiar Meltzer-Ehrman reaction. They have carried out a number of experiments, the results of which have led them to believe that one is not justified in attributing the contracting effects of blood-serum upon living sympathetically innervated organs to the presence of adrenalin. So far all experiments on man have been done with venous blood, but it is a question whether the peripheral veins contain adrenalin. The individual vessel areas react in a very different manner upon the injection of adrenalin into the jugular or femoral vein. The blood-vessels of the intestines, skin, and striated muscles contract vigorously, while those of the lung and brain dilate. The vessels of the kidney at first contract and then dilate. Some investigators think the dilating effect is due to the irritation of the vasodilators; others to the vigorous contraction of the highly innervated muscle fiber in the organ, which forces the blood into such organs as the lungs and brain which have poor sympathetic innervation. It is also a fact that upon running an adrenalin solution through the intestines, a large quantity of the adrenalin contained in the solution disappears, while in running through the lungs it retains nearly all of its original value of adrenalin.

The different reaction of the individual vessel areas to the contracting powers of the adrenalin can be beautifully shown by injecting adrenalin into different areas of veins, and then taking the pressure from the femoral artery. The authors carried out a number of experiments on dogs, by giving small doses and injecting them rapidly. The dogs were kept slightly under ether and the blood-pressure taken from the femoral artery. It was found that in the territory of the femoral artery, small, and sometimes even large, quantities of adrenalin were absorbed. In the brain the adrenalin was not retained. In the abdominal arteries a very marked retention of adrenalin took place; in the region of the portal vein a very small amount is absorbed. After the injection of the splenic vein a perfect retention took place. They also found that pituitrin seems to act like adrenalin. Thus it must be noted that the adrenalin is rendered physiologically inactive to a high degree in those vessel areas which retain it, and the minimal doses of adrenalin which go into the blood under physiological conditions are rendered physiologically inactive when passing through the capillary system. Hence, wherever the adrenalin acts, it must either be used up or otherwise changed. Falta and Priestley conclude then that the venous blood which comes from the highly sympathetically innervated organs under physiological conditions must be free from or at least contain less adrenalin than the arterial blood going to those organs.

They discuss also the importance of the results as to the bearing upon the regulation of blood-pressure and blood distribution. They have found in animal experiments that after injecting large quantities of adrenalin subcutaneously and then opening the chest after a period of one or two hours and tying the larger blood-vessels, they were able to keep blood distribution intact. In all of these experiments they found that the muscles, skin, intestines, mucous membrane, and spleen were pale, while the lungs, liver, and sometimes the kidneys were overfilled with blood, so much so that upon incision dark-colored blood escaped. In the lungs hemorrhages were not infrequent and the right heart as well as the whole venous system was greatly distended.

The way in which the influence of the chromaffine system acts upon the regulation of blood-pressure and blood distribution seems to be shown by these experiments. Through the long lasting absorption of adrenalin by the blood, a certain tonus in the large vessel areas of muscle, skin, intestines, etc., is acquired, and therefore a certain blood distribution is obtained which is regulated by impulses from the medullary nervous centers. It is also probable that the life-prolonging power of the chromaffine system is subject to rapid changes, which may be produced by an overstimulation of impulses. It is known that the function of the chromaffine system is regulated by the sympathetic nerves. The effect of the diabetic puncture is explained by an irritation of the chromaffine system in that from the center of the diabetic puncture impulses travel to the suprarenals, which cause a sudden discharge of the adrenal secretion, and therefore produce glycosuria. It can also be shown that by severing the

connection between the medullary centers and the abdominal organs the sugar contained in the blood sinks rapidly until it only shows slight traces. In their experiments they found that the decrease in blood-pressure could only be explained by paralysis of the vasomotor nerves in the abdominal organs and the rapid falling of the sugar in the blood to the absence of suprarenal activity. In the liver, which receives adrenalin containing blood through the hepatic arteries, the much larger quantity of blood flowing through the portal vein is free of adrenalin. They find from their experiments that the sugar appearing in the blood after the injection of adrenalin originates largely in the liver. The muscle glycogen, therefore, hardly comes in for consideration in the maintenance of the blood-sugar index.

By means of the constant function of the chromaffine system we tend to produce a certain distribution of blood, which supplies a sufficient amount of blood to the vital organs while the activity of the heart is at its minimum. Changes in the blood distribution, as caused by sudden impulses, can be regulated by the nervous system, but the authors believe it possible that every function, coming with an increase of metabolism, also leads to an increase in the function of the chromaffine system.

It now remains to consider the above views on the importance of the chromaffine system in the regulation of bloodpressure and carbohydrate metabolism upon pathological conditions. In cardiac defects, which appear with a hypertrophy of the left ventricle, we find not infrequently increased blood-pressure in the peripheral arteries. Also with a failure of compensation there follows a swelling of the liver, and it has also been found that in cases of hypertrophy of the left ventricle a hypertrophy in the chromaffine system follows, so that we may take it that the increased function of this system is compensatory. It is known that as a consequence of this the liver, kidneys, and brain are overfilled with blood. and that upon failure of compensation the liver swells up comparatively early. The

same condition is found in those individuals suffering from heart insufficiency due to arteriosclerosis. In mechanical obstruction of the right heart Ischer found a volume increase of liver and brain, so that probably the increase in blood-pressure in the venous system results in a reflex irritation of the entire sympathetic system, and so has an effect upon blood-pressure similar to that produced by adrenalin injection. An abnormal function of the chromaffine system must also have an influence upon the regulation of carbohydrate metabolism. deposition of carbohydrates in the liver probably is governed by this system, whereas the production is probably regulated by the pancreas, and thereby the relations of the function of the chromaffine system to certain forms of glycosuria are possibly explained.

# PITUITRIN IN OBSTETRICS.

In his inaugural dissertation on "The Importance of Pituitrin in Obstetrics," ROBERT CAHN, a candidate for the doctorate of the University of Freiburg, Germany, after reviewing the literature on the subject in extenso, makes the following report concerning the use of pituitrin in the Freiburg clinic: As a styptic he employed pituitrin eight times in cases of postpartum hemorrhage. The bleeding was promptly checked in seven instances, and it was noticed that the hemostatic action was exerted more rapidly than is the case with ergot preparations.

As an ecbolic agent he employed pituitrin in 87 cases. The injection was made subcutaneously in the gluteal region. When the first injection proved insufficient another was made after the lapse of two hours, and, in case of necessity, a third. Generally only one cubic centimeter was administered. Less than that did not prove effective.

In 83 of these cases the labor pains were inefficient in the first and second stages of labor. Among these it was possible to produce a prompt effect that led to spontaneous delivery in 55 cases. The labor pains generally set in within five minutes,

returned at intervals of from two to four minutes, and lasted from three-fourths of a minute to two minutes. In nine additional cases two injections of one cubic centimeter were required to produce spontaneous expulsion; in three instances three injections of one cubic centimeter had to be made in order to terminate labor; and in six cases recourse had to be had to forceps delivery because labor progressed too slowly.

In ten cases of uterine inertia the agent proved either totally ineffective or produced only insufficient labor pains. The reason for these failures cannot be given with certainty. Incidentally it should be stated that the injections were not made under the precautions outlined by Hofbauer. According to these the syringes should not be cleaned with alcohol but with a sterilized solution of sodium chloride. Since this precaution has been observed at this clinic, the effect of the injections has been more prompt and the number of failures smaller.

In seven of the ten cases of failure there were slight labor pains, so that it would be incorrect to speak of a total failure. It is even more than likely that a pronounced action would have been produced if another injection had been made. Why this was not done is not apparent. There were, however, three cases in which the administration of pituitrin proved wholly ineffective.

In addition to the 83 cases of uterine inertia, pituitrin was employed as an ecbolic agent in four cases in which it was desirable to accelerate the process of labor. In two of these cases there was an impairment of the fetal heart sounds. As these grew steadily worse, however, it was impossible to wait for the effect of the pronounced labor pains that set in, and the birth had to be terminated by means of the forceps.

Pituitrin also proved successful in two cases of placenta previa.

Cahn summarizes the indications for pituitrin as follows: It is the best ecbolic agent we possess, especially in the first and second stages of labor. One injection of

one cubic centimeter is generally sufficient to terminate the labor spontaneously.

Whenever it is necessary to accelerate the act of expulsion, after labor has begun (on account of a high fetal heart-rate, elevation of the mother's temperature, etc.), pituitrin generally does the work quickly and thus obviates a recourse to the forceps.

Pituitrin is not serviceable for the induction of a premature birth in the early months of pregnancy.

Pituitrin is a reliable styptic for the treatment of hemorrhage due to uterine inertia. This renders it particularly valuable for the prevention of secondary hemorrhage after a cervical Cæsarian section.

In the disorders of the placental period, pituitrin has also proved of service. It commends itself therefore whenever there is a delay in the delivery of the placenta after cervical Cæsarian section.

On account of its tonic effect upon the bladder, pituitrin has proved to be a useful remedy in the ischuria paradoxa of the parturient.

# FATALITIES FOLLOWING THE INTRA-VENOUS INJECTION OF SALVARSAN.

The earlier fatalities which followed the use of salvarsan were attributed by Ehrlich to the presence of advanced disease of the nervous or cardiovascular system, which he stated were contraindications to its administration. He claimed that with due care salvarsan was perfectly safe. Unforfunately, several fatalities have been recently recorded, and show that its administration, even in young and robust patients, is by no means devoid of risk. In an annotation are described two American cases in which acute nephritis was produced in young men by an intravenous injection of 0.6 gramme. In one case fatal anuria supervened. The patient at the time of the injection had a characteristic secondary rash, and his urine contained a trace of albumin, but no casts. Previously to acquiring syphilis he enjoyed uninterrupted health. In the other case the urine was perfectly normal, but after the injection the

patient presented all the signs of acute nephritis. In another annotation reference is made to the case of a robust man, aged thirty-five years, reported to the Académie de Médecine of Paris by M. Hallopeau. For a relapsing palmar and plantar syphilide the patient was given by a practitioner an intravenous injection of 0.3 gramme of salvarsan, which was well borne, and on the sixth day an injection of 0.4 gramme. Congestion of the face, vomiting, and epileptiform convulsions followed, and he died comatose.

Professor Gaucher declared that several deaths had followed the use of salvarsan at the Saint-Louis Hospital, and that almost all the patients died in the same manner, with epileptiform convulsions. In the Medical Review for December five cases of this kind are collected from German sources. Four proved fatal, and the necropsy showed the same condition in all-hemorrhagic encephalitis. One recorded by Prof. B. Fischer may be taken as an example. A healthy physician, aged forty years, in the course of his professional work contracted a chancre on the septum nasi. There was a maculopapular eruption. On March 28, 1911, 0.4 gramme of salvarsan was injected intravenously. A slight rigor and several attacks of vomiting followed. In a few days the eruption faded and the primary sore rapidly healed. As a prophylactic against relapses he underwent a course of mercurial inunctions. Five days after its completion (on May 6) 0.4 gramme of salvarsan was given intravenously. This was at first well borne, and after a day's rest in bed the physician saw his patients, but during the night he became ill, and on the following morning was found by Professor Fischer partially conscious. When roused he tried to answer questions, but with little success. There was constant movement of the upper part of the body. In the afternoon a fit of excitement, coma, and Cheyne-Stokes respiration supervened, and in the evening there was opisthotonos. The temperature rose to 104° F., and death occurred at 5.15 A.M. on the following The necropsy showed general morning.

parenchymatous degeneration of the organs and a fatty liver. The brain was diffluent, and there was slight chronic leptomeningitis of the parietal and frontal regions. The pial vessels were distended. Microscopically, numerous punctiform hemorrhages were seen around the minute vessels of the basal ganglia and polynuclear leucocytes distending the perivascular spaces (hemorrhagic encephalitis).

A German case of fatal jaundice after the administration of salvarsan is also reported. Jaundice has been noted in several cases of the administration of the drug. At a meeting of the Royal Academy of Medicine in Ireland on November 3, Mr. H. Moore reported a case in which 0.5 gramme of salvarsan was injected intravenously in an early case of general paralvsis in a man aged twenty-five years. A severe reaction with rise of temperature to 103° followed. Six weeks later the injection was repeated, and still severer reaction and death with paralytic symptoms followed. It is curious that most of the deaths have followed a second injection. This has led Professor Fischer to suggest that anaphylaxis may play a part. The point is important in connection with the recent claim of some of the advocates of salvarsan that two injections are necessary to cure syphilis.—Lancet, Dec. 23, 1911.

## DIAGNOSIS AND MEDICAL TREAT-MENT OF POLIOMYELITIS.

The Pennsylvania Medical Journal for December, 1911, contains an article by Spiller on this subject. He reminds us that as the possibility of infection through the nasal mucous membrane has been demonstrated experimentally by inhalation of an emulsion of an infected spinal cord, and by rubbing it into the nasal mucous membrane, it is well to disinfect the nasal mucous membrane so far as possible by some antiseptic mouth-wash and spray. Hydrogen peroxide or menthol is valuable for nasal disinfection. There is much reason to believe the disease may be transmitted by healthy carriers, and disinfection of the

nasopharyngeal passage of persons exposed to the disease is desirable. It is questionable at present whether either food or insects communicate the infection. Breastfed babies in some epidemics have been chiefly affected.

Recovery is not to be despaired of, even when the paralysis has been pronounced. The affected children should be isolated. and other children of the family should be kept from school for at least three weeks The room, the clothing worn by the patient, and the bedding used should be disinfected. Rest at the onset of the disease There is a possibility that is desirable. some cases may be arrested in the abortive stage by rest. Excessive exertion at this time possibly may bring on a paralysis that might have been avoided. Pain may be treated by antineuralgic remedies, but these may fail to relieve severe pain. The writer has known lumbar puncture to give great relief under such circumstances. Hot baths for ten or fifteen minutes every four hours. three or four times daily, have been found to lessen pain and produce sleep. Suppositories of opium with extract of belladonna may be useful.

Hexamethylenamin (urotropin) mav have some effect in disinfecting the spinal fluid, but if long continued there is a possibility that the formaldehyde set free may have a hardening effect upon the spinal cord. Two grains may be given every two hours during the first two or three days. The drug seems to have an inhibitory action rather than a curative. Calomel is a useful early remedy when constipation is present, and may be combined with soda. It may have some disinfectant action on the bowels, by which poison is supposed to find one of its means of entrance to the system. Castor oil also is useful.

Pneumonia and bronchitis are to be feared in some cases, and exposure to draught is to be avoided. The danger is increased by paralysis of the respiratory muscles.

Diaphoresis is desirable, and may be obtained by means of hot drinks, packing, and hot air. Some simple remedy, as citrate of

potassium, is useful for its action on the kidneys.

The tendency to contracture by faulty position and weight of the bedclothing must be avoided. Electricity may be employed after three or four weeks, and where muscles do not respond to the faradic current, the galvanic should be employed. The electricity should only be given by some one familiar with its use. Active movements may be made against resistance to the hand of another person, and attempted movements may be assisted by the electric current.

The serum treatment, according to Flexner, is in the experimental stage, and it cannot be predicted how soon or whether at all such a form of specific treatment of the disease will be applicable to the spontaneous epidemic disease in man.

## OPEN ETHYL CHLORIDE ANESTHESIA FOR MINOR OPERATIONS AND AS PRELIMINARY TO OPEN ANESTHESIA.

The Australasian Medical Gazette of November 20, 1911, contains an article on this topic by Hornabrook, who says that in the open method of ethyl chloride administration the drug enters the system gradually and with free admixture of air, the shock given is more in the nature of a gentle push into unconsciousness as against the more violent and rapid rush into a state of insensibility in the closed method, and with the open method there is no feeling of suffocation or desire to fight for air. It has been noticeable that there is very seldom any headache or feeling of great fulness in the head after the open method, both of which conditions are common after the closed. Ethyl chloride is very rapidly eliminated from the system, so that a few minutes after the completion of the operation the patient is quite fit to go home, a big advantage from the patient's standpoint as against ether or chloroform. Vomiting is rare unless the patient has swallowed some blood, in which case it will be brought up, but the feeling of sickness soon passes away. In the previous sentence the author.

wrote "swallowed" some blood, and this is very noticeable in dealing with open ethyl chloride, that the swallowing and coughing reflexes are retained, a big point when dealing with postnasal and tonsillotomy cases, and also with dental extractions, for here, if any blood gets into the back of the throat, it is swallowed, or trickles into the larynx, and a cough is at once set up, so that the fragment of postnasal growth or other foreign body is thrown up. On numerous occasions, after the extraction of a number of teeth, the patient has been allowed to come to sitting up in the dental chair, and not putting his head over the spittoon-directly the blood gets to the back of the throat a reflex cough has been set up, as one so often experiences when a small pellet of phlegm tickles the throat.

Given the advantages of open ethyl chloride, what are its disadvantages. One is, it is a slightly more expensive method of administering the drug, 8 to 10 Cc. being used in the majority of cases as against 3 to 5 Cc. by the closed method. A No. 70 tube of kelene graduated to 50 Cc. should do for six or seven administrations. other disadvantage is that in the cold weather especially a patient is occasionally met who is difficult to put deeply under the drug. He will go to a certain stage, but on attempting to extract teeth, his hand will be raised or he will make some movement that interferes with the operator. The class of case in which this may occur is that of the full-blooded male; the fault does not, however, rest entirely with the drug, but may be due to the ethyl chloride being sprayed too much on to one spot and not over a fairly wide area, which increases the evaporation. In the majority of cases in which the administrator meets with incomplete success, the fault lies in some failure of technique. A good method of administration in cases of this sort is to put the patient off with open ethyl chloride and then to deepen the anesthesia with closed somnoform. By this means the struggling stage which may be met with is generally avoided.

The length of time that a patient remains

quiet after being anesthetized by open ethyl chloride is from one to one and a half minutes, such as is the case with dental extractions and removal of adenoids. Open ethyl chloride can, however, be administered for a longer operation, such as removal of aural polypi, or setting a fractured limb. The author asserts he has had a patient under for twenty minutes by the open method, but does not recommend it for cases of more than five or ten minutes' duration, as it would be very expensive and has no advantage over open ether when prolonged anesthesia is required.

What are the advantages of open ethyl chloride as against somnoform by the closed method? First, he thinks it is certainly much safer. In the whole of his experience of open ethyl chloride, either by itself or as a preliminary to open ether anesthesiathat is, in nearly 3500 cases of all ages, both sexes, and nearly every major or minor operation—he asserts he has not once had a moment's anxiety or had to resort to any artificial means of respiration. He thinks this fact is mainly due to absence of sudden concentration by the open method, and the feeling in the patient's mind that there is nothing to struggle against—he knows that he will not be suffocated, but will get air the whole time. In dealing with plethoric men he certainly thinks it is easier to put them under with somnoform entirely, or to follow the open ethyl chloride by closed somnoform—this is especially the case in the cold atmosphere of winter. If you start with somnoform by the closed method, do not rush it, but bring the mask gradually closer to the patient's face; no good is ever done by rushing the anesthetic, even with nitrous oxide administration—the air supply ought to be cut off gradually, if necessary.

Ethyl chloride is certainly a more pleasant drug for the patient than somnoform, though the present formula contains 83 per cent chloride of ethyl as against 65 per cent in the original. The sensation of floating off into unconsciousness by means of open ethyl chloride is a most delightful one, especially if the administrator does not try

to rush the drug at the start. With open ethyl chloride the conjunctival reflex is lost early; this is followed by the breathing of the patient becoming of a stertorous or snoring character, especially if the mouth has not been gagged wide open. When the breathing takes on this vibratory character, which is generally within one and a half or two minutes from the very commencement of administration, the patient is ready for operation of short duration, such as the extraction of two or three teeth, opening of an abscess, or removal of adenoids by an expert operator. The whole of this time the corneal reflex is well marked. Should the administrator wish to deepen the anesthesia, he may continue the administration for ten or a dozen breaths after the vibratory character of the breathing has commenced; by this means the patient remains a short time longer under the influence of the drug and more time is given the operator, but even in these cases the corneal reflex is not lost except in rare instances. In fact, with open ethyl chloride, one of its great charms and points of safety lies in the fact that the corneal, swallowing, and coughing reflexes are retained.

- 1. For minor operations of short duration, where open ethyl chloride is employed by itself, the best material to use is honeycomb toweling of medium thickness, and of one layer only.
- 2. For prolonged operations when open ethyl chloride is followed by open ether, use a mask covered with one layer of flannel of medium thickness, two layers of domette, or eight layers of white gauze.
- 3. In the open ether anesthesia that has been preceded by open ethyl chloride, bridge over the stage between the two with a few drops of chloroform.
- 4. Lint, as a material for covering mask, is strongly objected to by the writer, owing to the thickness of the material, and the vapor of condensation forming on the inner layer of mask and the danger of shutting in a 2-per-cent or more of chloroform vapor, even when only a little chloroform has been dropped on at a time.
  - 5. The best make of ethyl chloride to use

is that known as kelene, not that the ethyl chloride is better than other makes, but the preparation is put up in 50-Cc. bottles, with a patent stopper which makes it very easy to handle. Kelene has also a pleasant odor which some of the other preparations have not.

- 6. In using kelene from the No. 70 bottle containing 50 Cc., be careful not to spray any of it into the patient's eyes, as it is very painful.
- 7. In order to get a free drop and prevent spraying, insert a very small piece of cotton-wool under the stopper—it will then be found that on gently elevating the lever the kelene will drop freely.
- 8. Do not forget to remove cotton-wool after each administration, or you will lose a large amount of kelene by leakage or evaporation.
- 9. A No. 70 bottle of kelene ought to do for six or eight administrations.
- 10. Don't rush your ethyl chloride at the start; place only about 15 drops on the mask or towel and let the patient get accustomed to the smell; rushing the drug will only make your patient gasp and have a somewhat catchy sensation in the throat.
- 11. After about a quarter of a minute, drop more ethyl chloride on the mask, increasing the size of the moistened area to about two inches in diameter, and then in another fifteen seconds or so to an area about the size of palm of hand.
- 12. The secret of good anesthesia, with free relaxation, is that of ethyl chloride vapor with free air mixture; if the drug is too concentrated on the patient, rigidity may arise.
- 13. Rigidity in a patient does not mean, as a rule, that the patient is not anesthetized, but that the drug, whether nitrous oxide, ethyl chloride, or ether, has been too concentrated on the patient without free admixture with air.
- 14. Surgeons, when operating, should remember that all anesthetics are poisons, and therefore continue steadily at work so as to get the patient off the operating-table as early as possible, without, however, sacrificing skill for speed.

- 15. Don't tell yarns to students dur operation, even if they do bear on point; a yarn can generally stand over whenefit to the patient.
- 16. Don't try to remove an abdomitumor as big as your head through a for inch incision; it only means bruising walls of the incision and the necessity the anesthetist to keep the patient for extra quarter or half-hour under a pois ous vapor which cannot possibly be benefit and certainly increases the likeliho of postoperative vomiting and tension the wounded area.
- 17. In all cases over twelve years of in which open ethyl chloride is follow by open ether, the writer uses as a rout 1/8 grain morphine and 1/150 atropigiven from three-quarters to one hebefore operation.
- 18. One-eighth grain morphine at 1/150 atropine act as well as the ½ or 1 grain morphine and 1/100 or 1/120 gratropine generally given, and also have advantage that the reaction of the iris not entirely masked by the morphine.
- 19. The reason for giving the hypod mic from three-quarters to one hour before operation is to allow time for the morphito pass over its stimulating stage and reather sedative period.
- 20. The morphine places the patient the table in a calmer frame of mind the if none had been given, and the atropic by inhibiting the vagus, acts beneficial also lessens the secretion in the air pasages and diminishes the likelihood profuse perspiration.
- 21. The morphine and atropine, as about are given in all cases, the presence of all min in any quantity in the urine making no difference to counter-ordering it.
- 22. The only disadvantage of the pr liminary of ½ grain morphine and 1/1/2 atropine is that in some cases the patie passes into a quiet morphine sleep, ar when the surgeon makes his skin incision there may be movement of the patient.
- 23. In using open ethyl chloride for minor operations, always remember to be your patient to empty his bladder before getting on to the operating-table.

24. The free administration of air with an anesthetic is quite as essential for the welfare of the patient during the stage of anesthesia as it is for the efficient running of your motor.

25. To put a patient under profound anesthesia with dilated immobile pupil, loss of corneal reflex, and complexion of a purplish-white hue is not good anesthesia.

26. The primary duty of the anesthetist is toward his patient; by carrying out that duty efficiently he fulfils his duty to the surgeon by maintaining the patient in the best condition during operation and on completion of it, so that the patient is placed in the most favorable condition for rapid return to health.

27. Rigidity in a patient under an anesthetic does not of necessity mean that he is not fully anesthetiezd; it may, and very often does, mean that he is asphyxiated from concentration of the anesthetic, such as ether vapor, nitrous oxide, ethyl chloride, or any other vapor not allowing free air supply to the lungs.

# THE USE OF CHROMOSANTONIN IN THE TREATMENT OF INTESTINAL AFFECTIONS OF THE TROPICS.

BEGG and MAXWELL in the China Medical Journal for November, 1911, tell us that in the Medical Reports of the Chinese Maritime Customs for 1887 Begg published an account of cases of chronic diarrhea cured by the administration of santonin, and from time to time followed that paper up by others in various journals. Further experience made it clear that white or purified santonin was practically useless, and that the virtue of the drug lay in some change brought about by exposure to sunlight, or in some similar way. And it is well that this should be clearly borne in mind, as both authors have seen failures due to its being completely disregarded. Another point which should be borne in mind is that the chromosantonin is more efficient when administered in olive oil. For some reason not fully clear, it is not so efficacious when administered by itself; and in some cases, possibly due to rapidity of elimination, may fail of the desired result.

In this paper the action of the drug as a vermifuge or vermicide is deliberately excluded. It is true that one may meet with chronic diarrhea due to the presence of the roundworm, and that these cases are at once amenable to santonin treatment, but the chronic tropical diarrhea which this paper discusses is a more serious matter. In its most common form it is called "sprue." Other cases simulate dysentery very closely, even if they be not caused by the known agents, the Shiga bacillus or the amœba histolytica; and a further group are characterized by chronic diarrhea of the sprue type but unaccompanied by any mouth symptoms whatever.

For the sake of clearness the authors divide their material into the consideration of:

- 1. The nature of the drug.
- 2. Its use in "sprue."
- 3. Its use in dysentery.
- 4. Its use in unclassified diarrheas.
- 5. The best method of administration, with hints on diet, etc.
- 6. A warning on the necessity of careful diagnosis and the treatment of complications.

Santonin is a neutral crystalline principle extracted from the unexpanded flower heads of *Artemisia maritima*. Probably, however, it is not truly neutral, but the anhydride of monobasic santonic acid, and its formula  $C_{15}H_{20}O_4$ .

Its general characteristics are well known and need not be discussed here. Suffice it to say that we have to deal with two substances, both of which pass under the name of santonin.

The first is ordinary white santonin, which has been tried in the treatment of the affections which are here discussed, and found to be useless or practically so.

The second is yellow santonin (chromosantonin of Montemartini). It is prepared by exposing ordinary santonin to sunlight over a considerable period, and that the yellow color is not a mere color change is proved by the following points:

"There is no change in weight, but the derivatives are different, the rotary powers are different, and the color is different." If the yellow santonin be dissolved in alcohol, and repeatedly recrystallized, it gradually passes back again into the white.

Chromosantonin is more readily oxidized, and the products of oxidation are said by Montemartini to be different. Sestini says that the white santonin is changed into formic acid, an uncrystallizable substance much more soluble in alcohol and ether than santonin (photo-santonic acid  $C_{15}H_{22}O_5$ ), and a red resinous substance.

Both the white and the yellow undergo oxidation in the tissues, and are excreted in the feces and urine in several forms, two certainly oxysantonins (Jaffe).

But little, however, is known of the process of oxidation. Under ordinary circumstances probably little is dissolved in the stomach. It may, however, in rare cases, be so rapidly absorbed as to be useless for the purpose of a vermifuge. The major part of the drug is absorbed from the intestine, and undoubtedly passes into the blood stream, as in large doses there is a marked influence on the cerebrum. It is certainly excreted by the kidneys, and possibly is reëxcreted into the intestine. On the urinary passages it has some irritative action, and it may cause incontinence in children, and clinically in adults it may act as a diuretic, though Cushny denies that there is any true diuretic action.

In large doses vision is markedly affected—first in the direction of bluish vision, followed by yellow vision, wherein everything white appears to be yellow; then there may be hallucinations of vision and confusion of speech, the sense of taste and smell may be deranged, and, in rare instances, hearing likewise. As the effect of the drug passes off, there may be a period of violet vision.

All these effects may supervene on a medicinal dose.

Poisonous doses are not considered, and it may be merely noted that there is a very marked cerebral disturbance in these cases.

The preparation of chromosantonin is not an easy matter. To get a really good speci-

men may need six months of sun in sub tropical regions, and white santonin with slight yellow tint is not chromosantonin though it has, as already said, been used a such, with consequent disappointment at the failure to get the expected result.

## PUTREFACTION TOXEMIA OF INTES

CORNWALL in the Medical Record of De cember 23, 1911, tells us that the diagnosi of chronic putrefaction toxemia of patho logical degree, and its identification, as th cause or aggravator of existing morbid conditions in any particular case, can usuall be made by clinical means alone, and par ticularly by the therapeutic method. The therapeutic method of diagnosis consists in giving an antiputrefactive diet in any sus pected case and watching results. If recovery or great improvement follows, especially when in this particular case or similar ones treatment by drugs or other agencies has failed to produce such favorable results the diagnosis is confirmed with a reasonable certainty. This therapeutic method of diagnosis has the advantages of facility of application and absolute safety, and it is on the whole more satisfactory than any of the laboratory methods now at our command; even the most exact of the laboratory methods, which consist in finding the toxic coefficient of the patient's blood, or the aromatic coefficient of his urine, can only give an index to the absolute quantity of toxic substances present, and tell nothing of the relation of this absolute quantity to the tissue resistance of the patient, which is the essential fact in the diagnosis.

The practical question here arises, What constitutes an effective antiputrefactive diet? In the case reports already presented the author has suggested in outline the antiputrefactive diet which he uses with his own patients. That diet is extremely simple and easy to prepare, and it has proved successful. Other diets equally effective can no doubt be devised without difficulty, provided the essential requirements of an antiputrefactive diet are satisfied. The es-

sential requirements of such a diet are: To reduce the putrefiable protein ingested to a rational minimum—that is, to a minimum which fits the particular case: to keep the contents of the intestinal tract acid throughout; to diminish greatly the amount of cane-sugar in the diet or to eliminate it altogether; to be sufficiently laxative to insure a bowel movement once daily, and to restrict the total quantity of food to the needs of the body. The first requirement is met by reducing to a very moderate amount, or to zero, all protein in the diet which is of animal origin except milk, which is not ordinarily putrefiable because it is protected by its lactacidifiable carbohydrate. The second is met by including abundant milk and cereals in the diet; and if in addition to the lactacid bacilli normally present, we artificially colonize the intestines with extra quantities of those bacilli introduced with the milk or otherwise, the acidification of the bowel contents is greatly facilitated: the cereals supply sugar in the lower part of the intestine, out of which those bacilli can make lactic acid, which is the great acidifier of the bowel contents and our most direct antiputrefactive agent. The third requirement, to cut out cane-sugar from the diet, depends for its sanction on the tendency of that in other respects desirable food to ferment in the alimentary tract and disturb digestion. The fourth requirement, to be sufficiently laxative to insure a bowel movement daily, is directed against that colonic stasis which favors so powerfully the production of putrefaction poisons. The fifth requirement, to limit the total amount of food to the needs of the body, has for its reason the advisability of making as light as possible the necessary work of the liver and kidneys, so that those organs can devote their fullest energies to neutralizing and eliminating the putrefaction toxins to which the tissues are intolerant.

Besides these essential requirements we have to consider, in prescribing an antiputrefactive diet for a particular patient, the indications and contraindications offered by his general condition and by special diseases which may be present. In some cases it is

sufficient to reduce the putrefiable protein to a moderate amount; in others it must be cut out of the diet altogether; in some the restriction of the total amount of food to the needs of the body should be as close as possible, while in others more latitude may be allowed; in young persons and those without demonstrable organic disease considerable latitude may be often allowed, provided the articles of food are appropriate: in older ones who have cardiovascular disease or nephritis, the total quantity of food should be closely restricted. The influence of habit is entitled to some consideration. especially in regard to the articles of food; it is not always advisable to put on an absolutely fleshless diet an elderly person who has been an extravagant eater of meat all his life; though such a one often accommodates himself to small and infrequent rations of flesh food, or even absolute deprivation of it, after having experienced the benefits of the more rigid diet; this is particularly the case when chronic nephritis is

Just what constitutes the minimum quantity of food necessary to maintain healththat is, the minimum amount of protein, and the lowest caloric requirement—the writer asserts he does not know, but clinical experience inclines him to the opinion that it is considerably less than what the standard text-books on diet assert. In his antiputrefactive diets he rarely gives more than 64 grammes of protein per diem unless the patient is extra large; and the calories he regulates according to the body weight, the age, the amount of work to be done, and the temperature; a man working hard in cold weather might require thrice as many calories as one lying in bed in a warm room. In chronic putrefaction toxemia the regulation of the fuel ration is not of such precise importance as the regulation of the protein ration; a few extra calories do little harm if they are derived from articles which do not disturb the alimentary tract or the liver. If the patient is obese he usually scrimps the calories, and if he is emaciated he is generous with them.

In arranging his antiputrefactive diet the

author usually relies chiefly on milk, bread, and cereals for protein, and secures extra calories from butter, olive oil, fat bacon, the starch of the roots and other vegetables, the sugar of fruits and honey, and milk sugar. One quart of milk, 12 ounces of cooked cereal, and six slices of bread will give about 55 grammes of protein and 1300 The vegetables, fruits, butter, bacon, etc., given to bring the calories up to between 2000 and 2500, will add enough protein to make the total of that food element about 65 grammes. If more protein is required he increases the milk or cereals, or adds cheese, or allows a small quantity of animal protein; in many cases of putrefaction toxemia a small portion of meat, fish, poultry, or eggs can safely be allowed once to four times a week; and if such a relaxation of the diet increases the protein too much the milk, cereal, or bread can be diminished to make the protein ration balance. Vegetables and fruits, though poor in protein content and of small fuel value, have an important place in an antiputrefactive diet because they supply neecssary salts, add variety to the diet, which is often monotonous to the patient, relieve constipation, and are "filling."

#### GONORRHEAL ARTHRITIS.

STOCKMAN in the British Medical Journal of December 2, 1911, writes on this topic. In his paper he puts on record the results obtained by the vaccine treatment of nine cases of gonococcal arthritis. The number is not large, but they were carefully selected as uncomplicated cases, all of which suffered only from urethritis or vaginitis, and arthritis, so that treatment was not made more difficult or prolonged by such complications as cystitis, conjunctivitis, prostatitis, etc. In all, the gonococcus was isolated from the urethra, vagina, or a joint, and cultures made. Autogenous vaccines were mostly used, but not exclusively. Three of them were treated at first with salicylates to make sure that they were not cases of true rheumatism; in the others vaccine treatment was begun at once. They

were all cases of moderate severity, a otherwise in good health.

In all, the treatment was at first exc sively by the vaccine, but in most of cases no distinct improvement followed, a after waiting a reasonable time ordina local treatment was usually added or s stituted. This was always followed by immediate and distinct improvement in local and general conditions, and was w finally led to cure. Only in one case recovery take place under vaccine treatm alone, but improvement was so rapid a so marked after only one dose of five n lions that, on comparing it with the resu in the other cases, one cannot help feel that the vaccine had nothing to do with The doses are marked on the charts, and reference to these will show that varyi quantities were used, this being done pi posely owing to the different opinions property vailing as to the most suitable dose. T author asserts he was unable to give t large amounts recommended by Allen, account of the violent reactions which som times followed on much smaller quantitie

Before a correct judgment can be form of the value of vaccine treatment in go ococcal arthritis considerable experience necessary of the clinical progress of the disease under other forms of treatmer His experience has been that the gre majority of uncomplicated cases of ord nary severity which require hospital trea ment can be usually cured in from five eight weeks. For years past he has ke accurate records of such cases, and h charts indicate briefly the progress of tw of average severity. They compare ver favorably with the similar cases treated l vaccine. The ordinary plan of treatment which he now adopts is to administer fu doses of copaiba, to apply to the affects joints or fibrous tissues a dressing of oil copaiba (three parts to one part olive oil after it has also been gently rubbed in, an to use bougies containing 2 or 3 per cer silver nitrate for the urethra. In wome the vagina is douched twice daily with solu tions of mercuric chloride (1 in 1000 and in 2000), or calx chlorinata (1 in 100), o potassium permanganate. These are frequently changed, and after the douching, solution of hydrogen peroxide or silver nitrate is freely used and a certain amount left in. If the cervix is deeply infected it is a practical impossibility to free it from the gonococci. If there is much fluid in a joint it should be tapped, and to avoid the formation of adhesions the joints should be gently moved several times daily. The pain of movement is often so severe, however, that patients will not allow this to be done.

The results here detailed, along with those got in other cases, have forced the author to the conclusion that the administration of dead gonococci exerts no curative influence in gonococcal arthritis—that it is, in short, valueless as a practical clinical treatment. Theoretical considerations also seem to bear this out. It is accepted that healthy animals can be highly immunized against certain diseases by inoculating them repeatedly with the corresponding dead bacteria—as, for example, in the case of the common pyogenic staphylococci and streptococci. There is, however, no general law with regard to this, for with many diseases it has been found impossible to confer any appreciable immunity on healthy animals by inoculating them with cultures killed by heat (tuberculosis, for instance). But even in those diseases where insusceptibility to infection can be induced by the injection of dead bacteria, it has still to be shown definitely that, with the disease already established, cure can be brought about by the subcutaneous injection of dead bacteria. Increased insusceptibility to an infective disease is one thing, the power of recovery from it is another, and it is far from certain that the latter can be conferred in all or even many diseases by injecting the corresponding dead bacteria under the skin. It has been carefully tried in bovine tuberculosis and has proved a failure. On the other hand, in the case of staphylococcic infections in human medicine, much evidence has been adduced to show the curative value of the proceeding, but it is certainly not a general law and probably is not even of wide

application. In the special case of the gonococcus it is acknowledged that even the living germs can produce little or no general immunity, and no antibodies are so far known in man, hence cure by dead organisms is still more unlikely. The author found that fresh joints sometimes became affected while the vaccine treatment was being given, and this should not have happened if the vaccine was capable of conferring immunity or even of increasing substantially the resistance to infection.

It is a matter of great clinical interest to determine whether the reaction after the administration of dead gonococci can be used as a method of diagnosing gonococcal infection. Irons has already done some work in this direction, and he states that eight adults who had no gonococcal infection showed no reaction after a hypodermic injection of 500,000,000 dead gonococci, while infected cases invariably reacted. When fully developed the reaction consists in increased pains in the joints, a rise of temperature, malaise with sickness and vomiting, and looseness of the bowels. There is sometimes redness at the site of the injection. These symptoms may last for a few hours up to a day and a half, and are apparently due to anaphylaxis. They vary much in intensity with the same dose and with different doses, and may soon cease or may continue to recur after each injection. In most cases, however, the reaction ultimately ceases.

In testing the reaction of healthy adults to polyvalent gonococci vaccines the author found that an injection of twenty to fifty millions caused a very slight rise of temperature (1° to 2° F.), with no other symptoms, while 150,000,000 caused a more distinct rise but no malaise. If the reaction symptoms develop unmistakably after a sufficient dose of vaccine, it may be concluded that a gonococcic infection is present. But the reaction varies so much with the patient, and probably also with the vaccine used. that it is impossible to define more accurately what is "a sufficient dose" for diagnostic purposes, and this irregularity seriously impairs the value of the method.

### INOCULATION AGAINST PLAGUE AT NAGPUR.

The Indian Medical Gazette for November, 1911, says of this plan to combat the plague at Nagpur that the statistics collected may be taken as trustworthy, and the relative case incidence and case mortality among the uninoculated in the table given below may be accepted as reasonably accurate. The subjoined table shows in a clear and precise manner the relative protection from plague which may be expected from inoculation. It has been constructed from a summary of 551 investigation sheets referring to plague-infected households only. The figures are collected from households containing protected as well as unprotected members who were exposed to infection, and among whom cases of plague subsequently occurred.

	Total number.	Cases.	Deaths.	Case incidence.	Mortality per cent.	Case mortality per cent.	Per cent immunity from death of in- oculated.
Uninoculated	2224	742	571	88.86	26.67	77.09	
Inoculated at mills. Inoculated outside.	752 181	74 15	10 6	9.84 11.45	1.88 4.58	18.51 40.0	94.82 82.85
Total of inoculated	888	89	16	10.08	1.81	17.97	99.95

From the facts and figures given above we can come to the following conclusions:

- 1. That inoculation markedly reduces case incidence.
- 2. That it also greatly reduces case mortality.
- 3. That inoculation as such is quite harmless.
- 4. That it is also harmless even when a person is in the incubation stage.
- 5. That the temperature reaction after inoculation is, as a rule, of a mild type.
  - 6. That it has no bad after-effects.
- 7. That the attack of plague in an inoculated person is generally of a mild type.

The author commends the above figures and the conclusions deduced from them for the careful consideration of employers of labor in the principal towns. Plague is more or less endemic in big towns. Past

experience has shown that the epidemic its worst results among the laboring p lation, who crowd in dingy, ill-ventil localities. Evacuation on an adequate is in their case out of the question, even were it so possible, it does not, out inoculation, afford the same degre immunity as preventive inoculation without that which evacuation provi No preventive measure at once so and so effective has yet been known to ence as inoculation, and the author to that the results of the Nagpur inquiry convince our captains of industry of striking advantages and persuade then resort to it in time during an epidemic conservation of labor and saving of hu life.

## DISINFECTION OF THE SKIN BY TINCTURE OF IODINE.

Noguchi (Archiv für klinische Chi gie, Bd. xcvi, H. 2) gives the follow as advantages of the use of tincture iodine in the disinfection of the skin cording to the method of Grossich: S plicity, which is especially important military surgery, country practice, when traveling; rapidity; cheapness; border of the disinfected area can be c stantly determined with certainty; the eration field can be quickly extended at time, so as to enable the operation to immediately carried into a field not pre ously prepared; in case of injury the wor is not soiled and irritated, as by the me ods of disinfection previously in use; bing of the skin is not necessary, a p cedure which is very painful and danger in certain conditions and must be carr out under anesthesia, which is thus leng ened unnecessarily; by this method it not necessary to expose a large area of body in the preparation of the patient, a he is saved the unpleasant sensation of o and wet to which he is exposed in the or nary methods of disinfection; tincture iodine is a stronger disinfectant of the man skin than are other materials; heali by first intention is more certain, and resultant scarring is very slight.

Disinfection of the skin of the operation field by means of tincture of iodine after the method of Grossich is not only from the clinical but also from the bacteriological point of view to be highly commended. In bacteriological experiments the method excels that of disinfection previously in use. One can begin the operation two minutes after a single painting with iodine. The second application of iodine tincture is not absolutely necessary, as the number of germs is but very little further diminished by the second application. Of greater importance is it that the first application be energetically made. Complete eradication of bacteria in the skin is not accomplished by the Grossich method. This method is not suitable for disinfection of hands nor for the field of operation in some cases, as, for example, in Basedow's disease it is to be avoided on account of the danger of iodine intoxication, and in Thiersch skin grafting if iodine is used the grafts will not hold. Previous washing of the skin with soap and water and shaving do not interfere with this method of disinfection, provided the skin be dried before the iodine is applied. The use of too great a quantity of iodine may have a harmful effect.

### VERMINOUS ENTEROSPASM CURED BY ENTEROSTOMY.

KIESELBACH (Beiträge zur klinische Chirurgie, Bd. 76, H. 1) says that it has long been a debated question as to whether an accumulation of ascarides in the intestine could produce a fatal illness. A few cases have been observed which seem to demonstrate that this is possible. The author reports the following:

A servant-girl, aged fifteen years, of previously sound health, became suddenly ill on March 29, 1911. She arose in the morning in good health, the bowels and bladder were emptied in the normal manner, but about an hour later she was seized with nausea. This was soon followed by sudden severe pain in the abdomen below and to the left of the navel. The patient vomited twice. As she lived near-by, she

walked to the hospital, but collapsed on reaching there. The pulse was 56 and the temperature 35° C. The girl groaned continuously and was doubled up with pain. The abdomen was soft and not distended: there was tenderness to pressure to the left and below the navel, and in the cecal region there was a tumor about the size of an apple, but hardly tender to the touch. Halfway between the symphysis and the navel there was a resistance which extended somewhat downward and to the left. There was some loss of resonance over this area, but otherwise no pathological condition could be made out. In arriving at a diagnosis, volvulus, some affection of the genital tract, as rupture of a tube, or poisoning with suicidal intent were thought of, but further investigation contraindicated all of these.

On account of the serious condition of the patient an operation was decided upon. An incision was made in the linea alba between the navel and the symphysis. After opening the peritoneum a loop of intestine presented itself which had a circumference of about 15 cm.; the serosa was reddened, and the intestinal wall was obviously in a spastic condition. It could be observed that this distention was due to the presence in the lumen of the intestine of an accumulation of roundworms. The mass extended for a distance of about 10 cm., then, after a short interval, for about 10 cm. further, with scattered worms at either end of the mass, so that about 60 cm. of the intestine was affected. The appendix and cecum as well as other abdominal structures were normal. An incision 2 cm. long was made in the intestinal wall, and through this the ascarides were removed one after the other by means of pincers. In all sixty-two worms were removed. The scattered ones were allowed to remain. The intestinal wound was sutured in two layers and the abdomen closed. The patient quickly recovered. The pulse returned to normal, the pain disappeared.

On April 3 the patient had the first movement of the bowels, and this contained one worm. On the fourteenth day she was

discharged, cured. Later she was treated for worms in the medical clinic, but none were passed. A history obtained later showed that the patient had often passed worms in childhood, the last one two years previously. At no time did she have any symptoms which could be ascribed to infestation with worms.

#### PERITONEAL ADHESIONS.

RICHARDSON (Annals of Surgery, December, 1911) thus summarizes a study on this subject:

Peritoneal adhesions are of two kinds, those which are useful and those which are harmful and dangerous.

It is futile to search for some agent that will banish adhesions from the realm of abdominal surgery, inasmuch as the processes involved in their formation are identical with those involved in peritoneal repair.

In dealing with peritoneal adhesions, the surgeon has recourse to three classes of procedures: (1) measures which prevent their formation; (2) measures which restrict their formation to the harmless variety; (3) measures which aid in their absorption.

Certain anatomical and physiological characteristics of the peritoneum have an important bearing on the problem of peritoneal adhesions; notably its extensive area, its remarkable absorptive power and ability to successfully cope with infection, the variable sensibility of different portions, the continuity of its endothelial surface, the rapidity with which it can form adhesions, and the completeness with which it can later absorb them.

Injury or death of the highly vulnerable surface endothelium is sufficient to set in motion the chain of pathological events which may terminate in dense adhesions.

Etiologically, there are a number and variety of factors involved, but they can all be grouped under the two heads—sepsis and trauma.

As specific prophylactic and curative measures, emphasis should be given to: (1)

rigid asepsis; (2) the use of moist hot gauze; (3) careful covering of all raw surfaces; (4) avoiding unnecessary exposure; (5) restricting trauma; (6) gastroenterotomy and enteroenterostomy; (7) returning the viscera to their proper anatomical relationship; (8) spreading out the omentum over the visceral surfaces before closing the abdomen; (9) careful closure of the peritoneum. A number of additional safeguards are available which have been tested and proved to be of value under certain conditions. The most reliable of these for general use are: (1) viable grafts of omentum or peritoneum; (2) lubricants; (3) judicious ante- and postoperative therapyespecially with reference to posture, catharsis, enemata, and length of stay in bed.

The field of specific chemotherapy offers the brightest hope for future progress.

Success in the management of the more aggravated adhesion case depends largely upon accurate clinical diagnosis, followed by intelligent operative procedures.

In properly selected cases, the use of adjacent mesentery for covering raw bowel surfaces offers distinct advantages over all methods hitherto proposed.

#### PENETRATING WOUND OF THE PAN-CREAS CURED BY OPERATION.

FOWELIN (Archiv für klinische Chirurgie, Bd. 95, H. 4) states that isolated gunshot or stab wounds of the pancreas are very rare, because as a rule other organs are injured at the same time. which the author reports is that of a woman twenty-four years of age, who had stabbed herself in the upper part of the abdomen with a long-bladed knife having a narrow, sharp tip. The patient was brought to the hospital, and operation begun one and three-fourths hours after the injury. Incision was made to include the knife wound and extended along the left costal margin. A small wound was found in the border of the omentum, but the left lobe of the liver, stomach, intestine, spleen, and blood-vessels were all intact. A wound from which the blood flowed freely was

found in the body of the pancreas. The blood-vessels were ligated, the wound sutured, and the abdomen closed with a drain leading down to the pancreas. During the operation the patient was almost pulseless, but several subcutaneous injections of camphor and the introduction of saline solution subcutaneously and intravenously improved the pulse, so that by evening the rate was 110 and its volume fairly good. Twelve days after the operation the drain was removed, and in five weeks the wound had closed. A week later the patient was discharged in good general condition.

### THE TREATMENT OF EXOPHTHALMIC GOITRE.

THEODOR KOCHER (Archiv für klinische Chirurgie, Bd. xcvi, H. 2) says that the treatment of exophthalmic goitre is governed by the fact that the thyroid has in all forms of the disease undergone an anatomical change which results in increased function. This applies to the primary form of struma ushered in by nervous symptoms. as well as to long-standing cases of thyroid disease which are later converted into the exophthalmic form, or the toxic or infectious form of strumitis which result in hyperplasia of the gland. There is therefore no basis for carrying out a different treatment in the neurotic forms of the disease than is carried out in the so-called secondary forms of Basedow's disease. The rapid and permanent elimination of the symptoms is dependent on the elimination of the disease from the thyroid gland. Among these conditions an important feature is the early removal of the hyperplasia upon which the overactivity depends. Attention is called to the fact that the leading experts in internal medicine and neurology have been induced by the excellent results which have been obtained by timely and well-carried-out operations to turn over their cases without reserve for the earliest possible operation after diagnosis has been made.

The favorable results which have been obtained by the operative removal of the

diseased tissue support the theory of hyperthyroidism in this disease. The etiological factors which are of so much significance in bringing about the symptoms of the disease when properly studied afford many suggestions as to the internal treatment. The importance of these etiological factors in reference to the treatment is shown by the sudden accentuation of the symptoms when the general health becomes run down. when there is great mental worry, during an acute attack of sore throat, or when an empiric undertakes to treat a case by the energetic administration of iodine. On the other hand, mental and bodily rest, as by a sojourn at the seashore, and the avoidance of iodine medication, will produce a cessation and a retrogression of the most acute symptoms. However, the histological changes in the thyroid do not cease under the influence of these measures, and the disease advances under the constant harmful influence of the thyreotoxic gland secretions.

There are still a large number of physicians who undertake to treat Basedow's disease in its early stages with all sorts of medicines, and to send the patients from sanitarium to sanitarium, referring them to the surgeon only when the patient has become convinced of the uselessness of these measures and has lapsed into the miserable condition which characterizes the late stages of the disease. In this state the patient is unable to endure anything; he complains on the least excitement or exertion of fatigue and palpitation of the heart, with a feeling of depression and anxiety, and the surgeon must deny him the operative assistance which he so urgently desires because it is unwise to subject him to the pressing danger of opera-When a toxic condition is clearly seen to be developing from a diseased thyroid, and which will with certainty in time lead to marked organic changes, especially to fatty degeneration of vital organs, as the kidney, liver, and heart, then the only rational and wise treatment is to eliminate the cause of these changes, which is the poisonous substance itself.

If Eppinger and Hess are correct in assuming that status thymolymphaticus is due to excessive vagus action, then a sudden reduction of the activity of the vagus combined with increased function of the sympathetic must exert an unfavorable influence upon the heart and can account for the severe postoperative tachycardia which sometimes occurs. These cases must be reckoned with even when early operation is done, and the author's method of successive operations is especially to be recommended.

The secretion of the thyroid can be repressed in different ways. Of the operative methods the mildest are the ligation of vessels and the section of nerves. Of the ligations the least disturbing is that of the superior thyroid artery; it produces the least injury to the tissues and can be quickly In the presence of large vessels performed. benefit can be obtained by tying one superior artery, and later on the second may be ligated; later still one-sided excision may be done, and eventually the remaining inferior thyroid artery can be ligated. Instead of ligation of the isolated artery, an easier method is to ligate or cut through the upper pedicle of the gland. This has the advantage that the nerve is cut through, and as a consequence reduction in secretion and atrophy of the gland are brought about. One must not, however, deceive himself that in the severest cases ligation of one or both upper vascular pedicles is to be done without due consideration, for, in the author's experience, out of 17 deaths, five followed simple ligation of the pedicles; but these were all advanced cases.

In cases of colloid goitre which have assumed the exophthalmic form, excision of the diseased portion of the gland is the suitable procedure. Resection of the lower pole of the thyroid constantly involves the danger of tetany through interference with the nourishment of the parathyroids. Those who practice this have a high mortality. After operation the patient should have a long rest, bodily and mental. A stay in a sanatorium is of especial value as it implies the preper dietetic treatment. A very im-

portant point is the avoidance of iodine preparations in the postoperative treatment. Of internal medication the phosphorus combinations appear to exert the most favorable influence.

#### TRANSPLANTATION OF FREE FAS-CIAL FLAPS.

Davis (Annals of Surgery, December, 1911) thus describes his technique: The part was shaved, washed with green soap and water, then with alcohol and ether. After the skin was thoroughly dry it was painted with tincture of iodine 2.5 per cent. The iodine solution was also freely used in the open wounds and after suture of the skin.

Fine black silk was the ligature and suture material used throughout. The wounds were closed in layers wherever possible. The skin was closed in every instance with the buttonhole stitch.

Dry sterile gauze secured by a bandage was used wherever dressings were applied.

The fascia was obtained, for the most part, from the thigh, the iliotibial band of the fascia lata being the most satisfactory portion to work with, as it is easily separated from the underlying tissues. In a few instances the strong abdominal fascia was employed.

The fascia was transplanted in both single and double layers, and in one or two instances was twisted.

In each experiment where adhesions were not desired the fascia lata (iliotibial band) was placed with the inner or muscle surface exposed. For example, when a flap of fascia was placed in a peritoneal defect, the muscle or smooth side was turned toward the peritoneal cavity, and it was found that dense adhesions were less likely to occur than when the outer side was turned toward the cavity.

Davis believes that many of the difficult situations arising during operations for the repair of weakened and defective tissues or for the control of bleeding surfaces will be simplified by the use of free fascial flaps. When the free fascial flaps were transplant-

ed into the subcutaneous tissue or muscle, periosteum, bone, cartilage, tendons, and ligaments, microscopic examination of the specimen showed that the fascia retained its own structure after transplantation and was apparently healthy and well nourished. This was true even after being kept in cold storage for thirty-five days and then transplanted into another animal. It was also shown that muscle and tendon defects may be bridged by free flaps of fascia. The fascia united firmly with the muscle ends and formed a strong symmetrical band between them. The use of fascial flaps to replace tendons is of especial importance and most promising clinically. While it is a well-known fact that free tendon transplantation can be successfully done, it must be borne in mind that it is often difficult to secure either long or short pieces of tendon without doing considerable damage.

There are large amounts of fascia available in the body which can be secured without damage to any other working part. Thus tendons of any desired length might be made from strips of the iliotibial band of the fascia lata.

Experimentally the tendons made of folded strips of fascia are not liable to adhere to surrounding tissues. Fascial flaps might also be used to prevent tendons from being caught in scar tissue. The final results after replacing tendons with this material are more satisfactory than with any foreign material or transplantable tissue with which Davis is familiar.

Free flaps of fascia were successfully transplanted into joints and also to take the place of patellæ which had been removed.

Bones were fractured and the fragments sutured with strips of fascia. The results of these last experiments were unsatisfactory on account of the difficulty in immobilizing the fragments. However, the use of fascia strips in the open treatment of fractures in human beings may be of great use clinically, as immobilization can be secured.

The fascia does not act as a foreign body, and has strength enough to stand any reasonable strain put upon it. Experiments also showed that flaps of fascia inserted in skull defects between the dura and bone edges will heal and give a strong membrane which will resist considerable pressure from within and without. When the dura is removed in addition to the bone, the fascial flap tucked under the bone edges will unite with the dura and also become tightly adherent to the bone edges.

There was in each instance a single fine adhesion of the cortex to the center of the fascial flap.

Fascial flaps might be used clinically in repairing skull defects and as an aid in closing of spina bifida.

Free flaps of fascia may be successfully used to cover prepared defects in the trachea, without subsequent infection; the mucous membrane grows across the fascia covering the defect.

It is also shown that free flaps of fascia may be sutured into peritoneal and muscle-fascia defects in the abdominal wall, and that it will incorporate itself with the surrounding peritoneum and muscle edges. A small omental adhesion was present on examination of the specimen in each instance, but in no case was there adhesion of the gut or any other abdominal organ to the fascia.

When a hernia was produced by the removal of a portion of the abdominal wall, except the skin, it was readily cured several weeks later by the transplantation of fascial flaps.

These experiments suggest the use of fascial flaps in the cure of large herniæ, where the muscle is atrophied, and for strengthening any weakened area in the abdominal or chest wall. The facility with which the fascia unites with the peritoneum suggests its further use in pleural and pericardial defects.

It is also suggested that fascia may be used to strengthen suture lines and weak-ened areas due to ulceration. It is further suggested that fascial flaps may be used to support sutures in friable organs, and also to bind raw postoperative surfaces. In none of the animals was there muscle hernia after the fascia was removed, nor does

there seem to be any untoward effect after removal of the fascia lata as far as the use of the limb is concerned. In every instance the fascia retained its own structure and seemed well nourished. After removal from its bed it was as tough and strong as when first transplanted. The greater strength of the fascia and in addition its thinness and flexibility are to be noted. It can be sutured into a defect under considerable tension, and the sutures will hold securely even when inserted close to the edges or ends of the flap.

### MISCARRIAGE AND RESULTS OF TREATMENT.

Young and Williams (Monthly Cyclopedia, June 22, 1911) from an analytical study of the records of 2000 patients admitted for miscarriage or its complications in the Boston City Hospital, during the period of 1896 to 1910, submit the following conclusions:

- 1. Spontaneous emptying of the uterus takes place in but about 13.2 per cent of all miscarriages.
- 2. The likelihood of a miscarriage to complete itself increases with the duration of pregnancy.
- 3. When it becomes necessary to use artificial means to complete the miscarriage, the use of the finger followed by the curette in later miscarriages, and of the curette alone in the earlier months of pregnancy, has given uniformly satisfactory results.
- 4. Experience has shown that where the cervix is extremely rigid it is better to introduce the curette and break up the fetus and placenta and remove them piecemeal than to attempt to dilate the cervix sufficiently to introduce the finger.
- 5. Packing the vagina and lower uterine segment is an unsatisfactory and often unsuccessful method of emptying the uterus. No success whatever was obtained in treating incomplete miscarriages in this way.
- 6. Packing is, however, of great value in two classes of cases: First, in exsanguinated patients, to stop the hemorrhage and give the woman a chance to recover some-

what from the loss of blood before empty ing the uterus. Second, when the cervi is very rigid, a tight cervical pack for twenty-four hours will soften it so that dilatation may be attempted with safety.

- 7. The results of artificial methods at as good as but not better than where natur has succeeded in emptying the uterus.
- 8. Artificial methods are necessary in majority of cases, however, simply because nature has failed.
- 9. In infected cases the essential thin is to get rid of the infectious material be emptying the uterus.
- 10. The later in pregnancy miscarriag occurs, the smaller the liability to becominfected, but the greater the likelihood odeveloping grave septic complications i infection does take place.
- 11. The mortality is practically the same at all periods of pregnancy.
- 12. Induced abortions have a greate mortality than accidental. The mortality of patients admitted to the hospital afte criminal abortions was 10 per cent.

# SURGICAL TREATMENT OF PULMON ARY TUBERCULOSIS.

MACNALTY (Practitioner, November 1911) in reviewing this general subjec observes that as early as the eighteentl century incision of tuberculous cavities o the lung had been recommended. Opera tive cases are reported in 1830. Up to 1897 only 40 cases had been published these chiefly including cases of pneumec tomy and pneumotomy. The results were so poor and mortality so high that scan encouragement was given to other surgeons to undertake these operations, but of late years new procedures have been devised with the object of assailing this problem The five operations which have received recognition are pneumectomy, pneumotomy, Freund's operation, thoracoplasty, and the formation of an artificial pneumothorax.

Of these five operations, the first is radical in its aims, while the remaining four attempt to foster the natural process of

healing. With regard to the type of case chosen for operative treatment, when the whole of these methods are under review, both early and advanced cases of pulmonary tuberculosis have been selected, one particular form of operation being devised for a localized patch of infiltration of the lung, while another is indicated only in the stage of excavation.

As to pneumectomy, for both early and advanced cases of pulmonary tuberculosis: in the latter class without exception operation has been followed by the death of the patient, nor are the results of pneumotomy encouraging since the majority of subjects die within the first two days after operation. In the cases that survive the immediate effect of the procedure, though fever and hemoptysis may be abated, the drainage of the cavity appears to have little or no influence upon the general course of the disease. In rare instances in which the cavities open into the pleura or into the thoracic wall, pneumotomy has been followed by permanent improvement.

Freund's operation, or chondrectomy of the first costal cartilage, is based on the inference that a congenital shortening of this cartilage, together with its thickening and rigidity, the latter intensified by calcification, forms a serious barrier to the full expansion of the lung and is a cause and not an effect of tuberculosis; for the apex of the lung thus restricted in movement, imperfectly aerated, and poorly supplied with blood becomes a favorable nidus for the tubercle bacillus.

Freund noted that in this type of case the accessory inspiratory muscles exaggerate their action and, struggling against the constriction of the lung, in many instances by their contraction crack or fracture the abnormal costal cartilage. As a result of this a false joint is made.

Freund found such a pseudoarthrosis associated with many healed apical lesions, and this led him to recommend the operation of chondrectomy. The indications for this are the physical signs of early pulmonary tuberculosis, restricted to one apex, supported by measurements showing a

diminution in the diameters of the superior orifice of the thorax, and x-ray examination. In addition Freund suggests exploration with a needle to ascertain the thickening and calcification of the cartilage. The operation, of course, merely aims at putting the affected apex in better condition to resist the attacks of the disease. Up to 1909, however, only five cases had been operated upon.

Resection of the ribs, thoracoplasty, with the aim of bringing about the falling in of the walls of the cavity was first practiced by Cerenville in 1885. Cerenville's patient died on the fifteenth day, and the operation fell into comparative disuse until the years 1898-99, since when cases have been recorded more frequently, the chief surgeons advocating this treatment being Turban, Landerer, Spengler, and Friedrich.

Landerer stated in 1902 that the operation was of value in chronic and afebrile cases, being contraindicated in rapidly advancing disease. He usually resected four to six ribs according to the extent of the lung involvement, and did a pneumotomy seven days after the thoracoplasty. The patients operated on showed marked improvement; they gained in weight and the expectoration was diminished or suppressed. Spengler and Friedrich's operations are somewhat more extensive in respect to the number of ribs resected.

As early as 1882 Forlanini advocated artificial pneumothorax. He observed that tuberculous patients with a pneumothorax do not always die, and that in cases which recover the tuberculous lesion often appears to be healed. It has further been noted that if a pleural effusion occurs in an advanced case of chronic pulmonary tuberculosis, the onward progress of the disease is frequently arrested and the condition ameliorated. These favorable results, it would appear, are due to the rest enforced upon the affected lung by the pneumothorax or effusion, just as a rheumatic joint responds to salicylates when kept at rest, while the endocarditis does not because the heart is obliged to continue working. So the lung, relieved in some part of

its function of respiration, has leisure to defend itself against the invasion of tubercle.

Bier's view on the subject is that the lung is put into a condition of hyperemia and its resisting powers are consequently augmented.

It follows then from these pathological analogies that the tuberculous chest might be immobilized by injecting liquid or gas into the pleural cavity, artificially producing in the one case a pleural effusion, in the other a pneumothorax. For the formation of an effusion injections of sterilized oil or of physiological serum have been employed (Schmidt), but the pyrexia and pleurisy that too frequently ensue, together with the possibility of pulmonary gangrene arising through puncture of the bronchi and lung, appear to contraindicate this plan of procedure.

The general consensus of opinion is that the operation of artificial pneumothorax should be performed on cases of chronic pulmonary tuberculosis in the stage of excavation. Murphy, it should be mentioned, holds a contrary view and states that the most practicable cases are "apical or monolobar tuberculosis in the early stage, as the pathological conditions are such that the compression of the lung can be accomplished and adhesions are not likely to be found." He excludes advanced cases, "as the fibrous tissue deposited in the lung will not permit compression of the lung, nor will the pleuritic adhesions allow of gas injection."

It is clear that for the manufacture of an artificial pneumothorax air or gas must be employed which is capable of slow absorption. It was found in the earlier experiments that air and oxygen were unsuitable on account of their ready absorption by the lung, and that nitrogen, a slowly absorbing gas, was preferable, and is, in fact, the gas principally employed in this operation.

Briefly, a sterilized needle is taken and connected with a U-tube containing the nitrogen, fitted with a manometer which registers the pressure and the volume of the gas injected into the pleura; the point in the chest wall through which the pleural puncture is made depends on the state of the disease in the individual case.

Authorities differ as to the amount of gas that should be injected, some favoring the injection of large quantities at lengthy intervals of time, while others advocate small amounts injected frequently until immobilization and collapse of the affected lung is secured. On the whole, the injection of small quantities of gas at a sitting appears preferable, the dangers of the former method being asphyxia—the compressing force being exerted on the sound lung as well as on the diseased one—and the sudden reflux of the contents of cavities into the bronchi of the unaffected lung.

The general and favorable results of an artificial pneumothorax are synonymous with those displayed by any improved case of chronic pulmonary tuberculosis. The cough abates, the expectoration diminishes or ceases, hemoptysis, if present, disappears, and the temperature returns to the normal. (It may be further added that the clinical evidence of excavation gives place to the physical signs of pneumothorax.)

There are nearly 200 authentic cases on record, many of which show the marked amelioration of symptoms described above, but as they have been chiefly reported during the last three years the curative value of the operation must still be regarded as an open question.

Forlanini had two patients who died from an intercurrent malady after a pneumothorax had been made, and at the postmortem examination each case showed healing and fibrosis of the pulmonary lesion; on the other hand, Brauer's three necropsies demonstrated incomplete arrest.

Death has occurred from asphyxia (large injections), syncope, and air embolism at the time of operation. In other cases the pneumothorax could not be made owing to the presence of pleural adhesions, or the treatment has been interrupted by the outburst of active tuberculosis in the previously unaffected lung. The pneumothorax has persisted in some instances.

The subjects selected for the operation have been principally those suffering from chronic pulmonary tuberculosis; in two or three cases the tuberculous lesion was an acute process.

#### FACTS AND FALLACIES IN THE TREAT-MENT OF SYPHILIS WITH SALVARSAN.

BOEHM (New York Medical Journal, Dec. 2, 1911) thus summarizes a study of this subject from both the clinical and experimental standpoint.

Salvarsan is a chemical of which comparatively little is known, pharmacologically. It produces very quick healing in most cases of primary and secondary syphilitic lesions. It is a valuable adjunct in the treatment of syphilis, but has not entirely displaced mercury or iodine, and should be used in conjunction with these latter drugs in all cases of syphilis, no matter of how long standing or how long a course of previous treatment a patient may have received.

A physician is justified in using it only after he has had some experience, and he should not jeopardize a patient's welfare by injecting into a muscle a corrosive chemical, such as salvarsan, which is destructive to muscle tissue by its escharotic and corrosive action.

There is only one method of administration safe for a patient and from which the maximum amount of benefit will speedily result—that is, the intravenous. This must be executed with the proper technique and apparatus only after a patient has been carefully studied in regard to his circulatory apparatus, determining the blood-pressure, condition of the kidneys, liver, etc. Chronic alcoholism is one of the most marked contraindications. Paresis and all cerebrospinal diseases, in which there is marked cardiovascular degeneration, are also contraindications.

Any case presenting evidence contraindicating the intravenous administration of salvarsan should be rejected as a case unfit for its use, either intramuscularly or subcutaneously. Every patient receiving an intravenous injection should remain quietly in bed for the first twenty-four hours. The making of a solution of salvarsan is a very simple procedure, and does not require the service of a chemist. If a physician is not competent to make such a solution, then he is not qualified to administer it. All solutions should be freshly made, immediately at the time of use, at the bedside of the patient, or in the operating-room, with the proper aseptic technique.

A single dose of salvarsan will not cure syphilis. No patient to whom it is administered should receive any positive assurance in regard to its ultimate efficiency. Not every individual responds equally well. Some patients may require three or four doses to produce a negative Wassermann reaction, and even in such a condition, who can assure his patient that he is cured absolutely?

A single dose of salvarsan, as a rule, produces only a mild parasitotropic action; the good results following an initial dose may be due more to its improving an existing anemia, and producing a stimulating effect on body metabolism. This should be explained to the patient, as most laymen are under the impression that a single dose is curative of the disease.

We must not promise too brilliant results from salvarsan. Each case of syphilis depends on the personal equation; each syphilitic patient is a specific case in itself. Candidates for matrimony with a positive Wassermann reaction should not be assured that a prematrimonial, sterilizing dose of salvarsan will eradicate all possible future traces of a former syphilitic infection.

Since the lay press has published so much about "606," the tendency to create many syphilophobiacs exists. Many of such persons have had a syphilitic infection years previously, married years later, having a healthy family, and apparently all traces of the former disease have been eradicated. Such patients, with a negative reaction and no traces of syphilis, should not be given salvarsan recklessly.

We must guard against a tendency toward a diagnostic syphilomania, medically speaking. Do not believe that every one has had syphilis and needs "606" until the absolute existence is proved, and an imperative necessity for the administration of the drug exists. American statistics show that about eighteen per cent of our population has syphilis.

#### EIGHTY-ONE CONSECUTIVE CASES OF CLEFT PALATE TREATED BY OPERATION.

BERRY (British Medical Journal, Oct. 28, 1911) tabulates 81 cases, which include all those on which he has operated from 1905 to the present date. He has not refused to operate upon any case under the age of sixteen, however wide or unpromising the cleft, except in a very few instances in which the general health was so bad that no operation at all seemed justifiable, and in a certain number of those in which one or more previous operations, performed by other surgeons, had resulted in so much destruction of tissue that no further operation was possible. In cases in which the previous unsuccessful operation had been the turn-over flap, one commonly known as the Lane operation, the destruction of tissue was usually so great that no further operation could be attempted, the obturator treatment being recommended. In more than half the cases the operation was performed after the age of three years.

Berry believes that the best period in most cases for the performance of cleft palate operation is between the ages of one and three, according to the nature and width of the cleft. In all cases the operation has been that of Langenbeck, or some slight modification of it, and the essential feature is not mere paring of the edges and median suture, but also the formation of a flap of mucoperiosteal tissue from the hard palate. In operating upon clefts of the soft palate Berry has to a certain extent replaced the lateral incisions by the wide tension stitch. Of the importance of detaching the soft palate from the posterior

edge of the hard palate in all but the mo trivial cases there can be no doubt what ever, if a good result is to be obtained. A to mortality, there was none.

Mr. Barrington Ward is quoted to the effect that the immediate operative motality in a large series of Mr. Arbuthm Lane's cases operated on during the fir year of life was 18 out of 144 first operations in the first year of life (mortality 12 per cent), although Mr. Lane prefers the quote the figures 5.9 per cent, obtained by including secondary and tertiary operation as well as the primary operations upon the same patient.

Mr. Fagge notes that of a series of 3 of his own cases operated on under on year of age at the time of their first operation, three died in the hospital, but the ultimate mortality was much more alarming and an effort to trace these patients showed that 14 others had died from various othe causes, of which six were directly or indirectly due to subsequent operation for harelip. So that 17 out of 38 were known to be dead, and out of the remaining 21 is was not stated how many were traced and known to be alive.

Berry states that of the 59 cases of his series in which the hard palate was in volved as well as the soft, union of the sof palate occurred fifty-eight times after oper-The fifty-ninth case was one of complete double cleft of the whole palate operated on at the fourteenth month; after the second operation union took place. Of the 21 cases of cleft limited to the soft palate, complete union after the first operation occurred seventeen times. One case of cleft of the soft palate was a complete failure, although the cleft was extremely narrow. The child was frail, fretful, and delicate. As regards union of the hard palate, in many cases the first operation did not effect complete closure, one or more, usually small, supplementary operations being required. Occasionally a large part of the cleft in the hard palate broke down after the first operation. In some cases of complete cleft, or of very wide cleft involving only three-quarters of the hard palate, he has intentionally left the anterior part of the cleft to be closed by a second operation.

When once the soft palate and posterior part of the hard palate have been well closed, there is generally but little difficulty in closing the anterior part of the hard palate by a subsequent operation, since the separation of the soft tissues from the underlying bone can be effected with more freedom.

As to the effect upon speech, in some cases speech has been so nearly perfect that it is very difficult to detect there is anything wrong with it at all.

Berry narrated the case of a boy, aged nine, upon whose cleft (11 mm. wide and involving the soft and part of the hard palates) he operated at the age of three years and ten months. Neither Berry nor others who saw the patient with him could detect the slightest abnormality in his speech.

In several cases a very high degree of perfection in speech has been obtained as the result of operation. In most cases a considerable trace of nasal intonation remains, although the patients can pronounce all their consonants normally and can make themselves well understood. If the speech of all the cases in this series is not as good as the author could have wished, it must be remembered that much of his hospital material has been very unpromising. At least ten of the cases in Berry's series have been the subjects of previous operations by other surgeons, which resulted in much destruction of tissue, and several other cases were imbecile or otherwise the subjects of marked mental deficiency. From such cases it is scarcely reasonable to expect really good speech. An extremely good result was obtained with the oldest patient in Berry's list, a woman with complete cleft of the whole palate, operated on at twentysix years. Berry states that his best results have naturally been with private patients, for whom lessons in articulation and careful training at the hands of a governess are obtainable. One of the difficulties that we have to contend with in hospital practice is that of obtaining for the patient after he has left the hospital sufficient skilled training in articulation, without which even the most perfectly restored palate will usually not give perfect speech.

The utmost that the surgeon can do is to restore the palate to its normal condition. Careful training in articulation, if obtainable, will do all the rest. But it should be skilled training, such as ordinary school-teachers and the mothers of hospital patients are rarely, if ever, competent to give.

Berry states it as his firm belief that the turn-over flap operation, before many years have passed, will be performed solely by those who do not follow up their cases and who consequently do not know what their results really are.

# ACETONE IN INOPERABLE CANCER OF THE UTERUS.

Samuels (Maryland Medical Journal, December, 1911) commends the use of acetone in inoperable cancer of the uterus, on the basis of excellent results obtained in five cases. He follows Gelhorn's method:

Under anesthesia the cavity or crater is thoroughly curetted. This is done to remove as much of the dead and necrotic tissue as possible. The curetted surface is then dried with cotton sponges. The Ferguson speculum is introduced to protect the vagina as much as possible. The patient's hips are elevated, and through the Ferguson speculum about one-half to one ounce of pure acetone is poured into the wound.

The anesthesia may now be stopped, and the patient left in this position from fifteen to thirty minutes. The acetone is now permitted to run out through the speculum by lowering the table, and the cavity is packed with a strip of gauze soaked in acetone. The speculum is removed gradually, and the excess of acetone that may have come in contact with the mucosa of the vagina is wiped off with wet gauze sponges. The surface is then dried, and a cotton tampon inserted into the vagina to absorb any excess of acetone.

After this preliminary curettage and first application of acetone the patient may leave the hospital the next day, as she does not require any future hospital care. The subsequent applications of acetone may be made at her home or in the physician's office. They should begin about five or six days after the patient leaves the hospital, and then be made twice or thrice weekly, if the symptoms require it. With the applications of acetone there is a progressive diminution of the crater, and smaller specula may be employed. In making subsequent applications of acetone, either in the physician's office or at the patient's home, the pelvis should be elevated, as in making the first application, and about the same amount of acetone applied. If the physician is without an office assistant, the patient may hold the speculum in position. Care must be taken, however, not to allow the acetone to run over the vulva. As a precautionary method, to prevent irritation from the acetone, it is a good plan first to coat the vulva and vagina with a layer of petrolatum. After the acetone is allowed to run out, the vagina should be swabbed and a large cotton tampon coated with vaselin introduced into the vagina before the speculum is completely withdrawn. The tampon may be removed by the patient in four or five hours.

The remote result from the application of acetone manifests itself in the marked reduction of the intense odor. charge, which at first is profuse and watery, gradually disappears; hemorrhages occur with less frequency, and are not nearly so profuse. After three or four weeks of this acetone treatment, a considerable diminution in the extent of the wound cavity is noticeable. The walls become smooth and firm, and in one instance the walls were so firm that the finger could not remove any friable tissue. With the stopping of the weakening hemorrhages and discharges, the general health of the patient for the time being improves visibly, and the pain is somewhat lessened. In two patients in whom cancer had extended to neighboring organs, while the discharge and hemorrhages ceased under its application, the pain was not relieved, and morphine is large doses was necessary.

#### COLOTOMY.

Daniel (Lancet, Nov. 18, 1911) note that clinical evidence, derived from the ser sations of patients who have colotomie clearly shows that most of the successfi cases have very definite warning of the in pending action of their colotomies; whi others learn by certain sensations peculia to each, and which are not normal warn ings, when the bowel is going to ac Hence, even though the normal warning an impending action of the bowel is absen after the performance of a colotomy, a warning is not cut off, or if it is "aura develop which efficiently replace the warr ing. Consequently we cannot maintain that one of the great disabilities of colotomy the inability to know when the bowel going to act.

He further holds that the many ingeniou methods of endeavoring to manufacture sphincter "to prevent diarrhea" are not onl unnecessary but are bound to fail to effect this object-not even nature's sphincter can prevent diarrhea. But inasmuch as it impossible by any method of performin colotomy known to him to retain the whol of the fecal reservoir, the sigmoid, th operation, by reducing the storage capacit of the bowel, inevitably interferes to som extent with the normal capacity to hold th accumulation of the twenty-four hour débris, which means that the one norma daily evacuation will be interfered with The nearer the rectum the colotomy open ing is placed the less do we reduce th storage capacity, and vice versa. Hence the selection of the transverse colon as th site of a colotomy is absolutely indefensible while the historical method of selecting th proximal end of the sigmoid is also incor rect; the question of prolapse apart, th ideal site for a colotomy is the junction of sigmoid and rectum.

As to the method of performing the oper ation, he advises the making of a spur b

means of a glass rod passed through the mesentery to sustain the bowel, the ends being protected by a rubber tube and the glass rod being removed on the seventh to the tenth day. In regard to future prolapse a constant expulsive effort due to diarrhea is the most important predisposing factor to this painful and disagreeable complication. Another is the "drawing" effect of even the best made colotomy receptacles, due chiefly to the want of an air vent, the introduction of which tends to leaking. The more the sigmoid retains its normal function of a reservoir the less the probability of prolapse, and we can prevent diarrhea; hence we can practically remove the most important factor conducing to prolapse.

In performing the operation of colotomy by the so-called "gridiron" method, it is wise after making the incision in the tendinous part of the external oblique in the direction of its fibers to notch the aponeurosis at right angles to the fibers. Daniel has known of at least two deaths from nipping of the wall of the intestine by the strong tendinous edge of the external oblique to such a severe degree as to lead to a linear band of necrosis of the bowel wall. Death was due to the intense toxemia following this necrosis.

#### TREATMENT OF PULMONARY TUBER-CULOSIS BY INDUCING AN ARTI-FICIAL PNEUMOTHORAX.

RHODES (British Medical Journal, Oct. 28, 1911) considers that the indications for this treatment are: (1) Pulmonary tuberculosis limited almost, if not entirely, to one lung. (2) Recurrent hemoptysis if at all severe. (3) Continued fever, cough, and general increase of disease on one side, while the other lung is healing, or only slightly affected.

Slight inactive disease in the fairly sound lung is not a contraindication. The increase in the blood flow through this lung seems to influence the healing process favorably. In some cases it is impossible to produce a pneumothorax, owing to extensive pleural adhesions.

The operative procedures divide themselves into two distinct stages—the preliminary operation and the after-filling. The patient's chest is examined with the x-rays, and a site for the operation is chosen where the pleura appears thinner and the disease less pronounced. The patient is given an injection of morphine. He lies on his side with a pillow under the sound chest. The skin and subcutaneous tissues are anesthetized with novocaine and adrenalin solution, after careful sterilization of the skin by painting with iodine, etc. The whole operation must be carried out under the strictest aseptic conditions.

An incision is made over the selected intercostal space, and the tissues are separated so that the external surface of the parietal pleura is exposed: this is facilitated by the use of the retractors invented by Brauer and Spengler. When a space about a quarter of an inch square has been defined, bordered by ribs and retractors, and having parietal pleura for its base, the latter is punctured in an oblique direction by a blunt hollow needle. If the operation is immediately successful, one hears a rush of air into the pleural space, and the needle is at once connected with a manometer having a three-way cock, so that nitrogen may be introduced through the needle, while the pressure is measured. The blunt needle and open operation obviate to a large extent the dangers of nitrogen or air embolism and of puncturing the lung tissue. Five hundred to a thousand cubic centimeters of sterilized warm nitrogen is allowed to flow into the pleura or injected under a pressure equal to 2 or 3 cm. of water. The warmed nitrogen obviates the possibility of pleural reflex. If the patient experiences much pain or seems faint, or his condition otherwise deteriorates during this injection, it must be stopped at once, but the idea is to make as large an air bubble in the pleura as possible, so that the after-fillings may be made with greater success and less danger of puncturing lung, adhesions, visceral pleura, etc. After a sufficiency of nitrogen has been introduced, the wound is sewn up, an antiseptic air-tight dressing is applied, the

chest is examined again with the x-rays, and the pneumothorax which has been induced is observed and its limits as far as possible defined.

If the blunt needle does not at once tap the pleural space, it may be necessary to pass a gum-elastic sound down its lumen to clear away any obstruction from the orifice of the needle or its immediate vicinity.

Two days later a sharp-pointed hollow needle, either such as that used by Saugman for his operation, or a blunt cannula of similar caliber and length with a trocar which can be removed, is introduced into the nitrogen bubble in the pleura, and a further 500 or 1000 Cc. of nitrogen is injected under a slight pressure (from 3 to 5 cm. of water). If adhesions are very dense this injection may be painful. The more these adhesions can be stretched, the more successful will the treatment be, and if some of the firm ones are broken down the lung collapse will be more complete, and in consequence the lung rest gained will lead to a more certain healing of the ulcerating and inflamed lung tissue. This after-filling must be repeated at varying intervals for at least two years.

The indications for refilling are pain or discomfort in the chest, slight fever, and return of the cough. In a certain proportion of the cases (about 30 per cent) an effusion forms in the pleura during the three or four months succeeding the commencement of this treatment. Patients who suffer from this complication often complain of much pain when the fluid is forming, but do not seem to progress less favorably; the fluid eventually clears up under a dry diet, and it is probably never necessary to aspirate the effusion.

It is most important to examine the chest with the x-rays before and after each filling, observing the size of the pneumothorax and the shape of the lung as determined largely by pressure in the pleura and pull of pleural adhesions.

Rhodes states that encouraging results have been obtained on the whole. He further notes that he has saved a large number of patients treated in the last five years, and that there is no doubt that several of his friends and patients have recovered from an apparently quite hopeless condition, and are now enjoying life as the result of this treatment. In 39 cases the lung condition has been greatly improved and the prognosis is favorable. In 14 patients the lung condition has been improved, but for some reason, such as abdominal tuberculosis, carelessness, or fresh infection of the other lung, the patient has not done well.

In 17 patients there has been no good result. Of the whole number 21 patients are now dead. These results have been obtained in patients who were all seriously ill and becoming worse.

Niehans has performed the operation, according to Brauer's method, twenty-four times. In seven cases he did not succeed in producing a pneumothorax. Of the remaining 17, one died nine months later of hemorrhage from an incompressible cavity. Seven are fit for work or at it. Nine are still under treatment, and the prognosis in these cases is described as good.

#### POSTOPERATIVE DROWNING.

GRUNBAUM and GRUNBAUM (British Medical Journal, Nov. 11, 1911) after calling attention to the fact that nearly all surgical cases of collapse are infused, irrespective of whether such collapse be due to loss of blood or to fall of blood-pressure, note that the immediate effects are usually sufficiently gratifying and dramatic to obscure from the surgeon's vision the resulting tragic ending. Yet postinfusional death from pulmonary edema is common enough to raise again the question, Was it inevitable? After observing that with scarcely an exception the anesthetic used in these fatal cases has been ether, the caution is urged in regard to the rapidity of its administration, the constitution of the intravenous injection, the temperature at which it is given, and the total quantity introduced. In many cases preoperative disease of both kidneys and the lungs has existed. The authors hold that saline infusion, especially intravenous, should be properly used only REVIEWS. 297

to replace fluid lost from the body. Fall in blood-pressure due to other causes should be treated by other therapeutic means.

The procedure of infusion should be carried out with the same care and skill as the main operation.

If it is anticipated that saline infusion will be necessary an anesthetic other than ether should be chosen.

When coexisting renal insufficiency is suspected, intravenous infusion, especially in conjunction with ether as an anesthetic, is better avoided altogether. Rectal infusion appears to be less dangerous, and subcutaneous infusion seems to stand between the two.

#### MERCURIAL STOMATITIS.

LE BLAYE (Thèse de Paris, Journal de Médecine et de Chirurgie, Oct. 10, 1911) has conducted an experimental research upon the etiology of mercurial stomatitis. He found it impossible to produce this condition in rabbits or guinea-pigs, but dogs were extremely susceptible, exhibiting the characteristic gingivitis and shortly ulcerating and gangrenous patches upon the

cheeks and the tongue, resulting, unless the mercurial treatment was stopped, in death. The point of major interest in his investigation lies in the fact that a microscopic examination of the exudate from these ulcerating patches exhibited always many fusiform bacilli and spirochætæ identical with those described by Vincent as characteristic of the angina which bears his name, from which the author concludes that mercurial stomatitis is not due to the venereal infection but is really the mercurial rendering the mucous membrane and the gums peculiarly susceptible to this form of infection. This belief is somewhat accentuated by Moller, who notes that patients subject to Vincent's angina are singularly subject to the influence of mercury, and that diagnostic error is likely to result most seriously for them.

The therapeutic deduction from these facts is to the effect that mercury in any form is strongly contraindicated in Vincent's angina, and that strict cleanliness of the mouth, together with a mild antiseptic, is likely to be the most potent means of preventing the development of mercurial stomatitis.

### REVIEWS.

PRACTICAL TREATMENT. In Three Volumes by Eighty-two Collaborators. Edited by John H. Musser, M.D., and A. O. J. Kelly, M.D. Volume III, Illustrated The W. B. Saunders Company, Philadelphia, 1912. Price \$6.00 per volume.

The present volume is the concluding one of an ambitious work designed to present modern methods of treatment from the standpoint of the patient's symptoms and lesions rather than from the standpoint of the drug. If any mistake has been made in its compilation it is that too many authors have been assigned to the task. There are fifty-five articles, written by thirty-eight contributors, with the result that some of the contributions are not more than two pages in length. On the other hand, it is

only fair to state that in almost every instance the name of the author is familiar to the profession as that of one who has paid particular attention to the theme with which he deals.

The first ninety-seven pages are taken up with the constitutional diseases; and respiratory diseases, the consideration of which follows, covers 145 pages; diseases of the digestive system, on the other hand, covers 323 pages; diseases of the urinary system, 80 pages; diseases of the nervous system and muscles and diseases of the mind cover 312 pages. The articles are well written, adhere largely to treatment, and do not diverge into considerations of etiology

and pathology. The volume provides excellent information which will be of great value to every general practitioner.

TUMORS OF THE JAW. By Charles Locke Scudder, M.D. With 353 Illustrations, 6 in Colors. W. B. Saunders Company, Philadelphia and London, 1912.

Our French and German colleagues easily pass us in the production of creditable monographs and exhaustive treatises containing full expositions of subjects with which they deal. Many American workers, however, are no longer content with condensed, concise, and epitomized reviews, but are recording in larger ways, and more permanently, personal observations woven into most attractive fabrics. The volume before us is of this type, embracing nine chapters, as follows: Epulis, Sarcoma of the Jaws, Benign Tumors of the Jaws, The Odontomata, Carcinoma of the Jaws, The Diagnosis and Operative Treatment of Malignant Disease of the Upper and Lower Jaws, Tumors of the Palate, Leontiasis Ossea, and Prosthesis. The treatment of each division is along conventional lines and without noteworthy departure. lesions are depicted both macroscopically and microscopically, and generalizations as to symptoms are often condensed into case histories, accompanied by good illustrations. In addition to detailed histories of individual cases, summaries of results from various clinics—Heidelberg, Johns Hopkins Hospital, Massachusetts General Hospital, and elsewhere—are also incorporated. Although one seeking points adapted to disputation could easily find them, they are as a rule of a kind justly permitting two views. Sometimes statements that are strange bedfellows occur; thus, in speaking of epulis we are told (p. 18): "It appears most often in childhood and young adults. In a series of 117 cases the third and fourth decades were most frequently involved." Fibromas of the jaw (p. 141) "appear in middle life, most commonly during the third decade." Such disconformity is, however, quite exceptional.

The volume is avowedly a clinical work, nevertheless such abstract science as is

necessary properly to elucidate the origin and nature of a tumor is incorporated with unusual clearness and detail. Although evident elsewhere, the chapter on odontomata may be especially cited in support of the view just expressed. Throughout the volume the author shows an intimate knowledge of many phases of practical embryology and uses his information discreetly, without undue prominence on hand or sketchy incompleteness on other: proportion is well maintained. the discussion of leontiasis ossea a suggestion of relation to hemihypertrophy of the face or to osteitis deformans would have been permissible; further, it is not certain that it "corresponds to elephantiasis in the soft parts." Extended study of elephantiasis and elephantoid conditions strongly indicates the relation of both to lymphatic obstruction. There is no evidence that such factors are operative in leontiasis.

Throughout the volume diagnosis and treatment, especially treatment by operation, are fully and adequately considered. The volume abounds in illustrations—353 in 357 pages—of a practical kind, but usually without pretensions to the artistic. The publisher has creditably fulfilled his obligation as to typography, paper, and binding; the reader must wish, however, that equally satisfactory results could have been attained without so much weight; three pounds should not have been needed for less than 400 pages of text.

W. M. L. C.

THE PRINCIPLES OF HUMAN NUTRITION. A Study in Practical Dietetics. By Whitman H. Jordan. The Macmillan Co., New York, 1912. Price \$1.75.

The author of this book is Director of the New York Agricultural Experiment Station, and has heretofore written a volume upon the feeding of animals. He makes no claim to having written on his own authority, but has relied upon the conclusions of those authorities and investigators whose sound scholarship in this line of research is unquestioned. He therefore has quoted largely from the standard books upon physiological chemistry and upon nutrition, and has used as illustrations figures

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from the book upon "Anatomy and Physiology for Nurses," published by Lea & Febiger.

The object of the volume is well described in its title. The first chapter deals with plants as a source of human sustenance. the second with the chemical elements involved in the nutrition of the body, and the third and fourth with the compounds of human nutrition. The fifth chapter deals with the digestion of food, and the sixth with the distribution and transformations of the digested food. The seventh and eighth chapters deal with the functions of food compounds and the law of nutrition. The second part of the book deals with practical dietetics, the relative values of foodstuffs and their use at various periods of life. There is also a chapter upon food economics, special dietetic methods, nutrition of children, the character and food value of certain commercial articles, and the preparation and keeping of foodstuffs. Perhaps the chapter dealing with the food value of certain commercial articles will prove most interesting to the average reader, who is in doubt as to whether he should accept the glittering promises made by the manufacturer as to the nutritious quality of his product.

It is evident that the book is in one sense a representative of one department of those subjects which are usually considered in larger volumes under the term "Hygiene." It is well written, carefully prepared, and can be read with advantage by physicians, medical students, nurses, and dieticians.

HEALTH AND MEDICAL INSPECTION OF SCHOOL-CHILDREN. By Walter S. Cornell, M.D. Illustrated. The F. A. Davis Co., Philadelphia, 1912. Price \$3.00.

As Dr. Cornell is Director of Medical Inspection of Public Schools in the City of Philadelphia and Lecturer on Child Hygiene in the University of Pennsylvania, he is well qualified to prepare a book giving useful information along the lines indicated in this title. The opening part of the volume deals with medical inspection and hygiene, and then with the defects and diseases of various portions of the body, as

the eye, ear, nose and throat, the teeth, the nervous system, the mind, the skin, speech, and of the skeleton. There is also a chapter of nearly forty pages upon the infectious diseases, with special reference to their prevention; one upon the prevalence of infections in disease, in which interesting tables are given derived from an examination of children in institutions and public schools. Interesting charts as to the prevalence of the various infections are also printed. To the large class of teachers who are interested in this branch of their work the book will undoubtedly prove of great value.

THE TRACEDY OF CORIOLANUS. Edited by Stewart P. Sherman, Ph.D. The Macmillan Co., New York, 1912. Price 85 cents.

This small volume, which can easily be slipped into the side pocket of a coat, belongs to a new series called "Tudor Shakespeare," which is to appear in forty volumes, two of which are published each The publishers wish the book called to the attention of medical men because of the convenience with which it can be carried, its low price, and in the hope that it may prove entertaining when the tired doctor comes home from his work. Notwithstanding its moderate cost and its light weight the paper is good, as is also the type, and we have no doubt that many of the volumes of the series, if not all of them, will prove popular to those of our readers who are fond of classical literature.

THE DIAGNOSIS OF NERVOUS DISEASES. By Purves Stewart. Third Edition. E. B. Treat & Co., New York, 1911.

The third edition of this admirable textbook comes before us in a slightly enlarged form. The subject of the work, as before, is that of diagnosis, and it is approached from the clinical standpoint; abstruse details of mere theoretical matter are omitted. Statements and descriptions are clear and concise and presented in such form as to appeal both to the student and to the busy practitioner. Here and there additions have been made to the text, while a number of new illustrations have been introduced. The value of the book, already great, has thus been still further enhanced. The illustrations, as in the previous editions, consist almost wholly of original material, a small number only from other works being introduced, and these being mainly of diagramatic value. We cannot but commend the work most favorably.

F. X. D.

THE TAYLOR POCKET CASE RECORD. By J. J. Taylor, M.D. The Medical Council Co., Philadelphia, 1912. Price \$1.00.

This little book, which is of the same size and shape as the ordinary "visiting list" in which physicians make a record of their visits, is designed, as its name indicates, to afford a means by which case records can be kept in small volumes. The headings which are given are excellent, but the space is so small in which records can be made that we fear it cannot prove very useful unless one uses a very fine pen, has a very smooth surface to write upon, and is not in a hurry, all of which conditions are usually absent when the busy practitioner is at work.

MATERIA MEDICA STEP BY STEP. By Arthur W. Nunn, F.C.S. P. Blakiston's Son & Co., Philadelphia, 1911. Price \$1.40.

It is manifest from its title that this little volume of little over 200 pages deals solely with the elementary facts of Materia Medica as they are studied by the student of pharmacy and the first-year medical student. Each step, so-called, or chapter, is followed by a series of questions, so that the student can quiz himself on what he has just passed over.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Original Articles. Edited by Henry W. Cattell, A.M., M.D. The J. B. Lippincott Co., Philadelphia, 1911. Price \$2.00.

We have so frequently noticed the appearance of earlier volumes of International Clinics that our readers must be familiar with their objects. In the present volume the first five articles, which cover 27 pages, are therapeutic in nature. Others follow on Diagnosis, Medicine, Surgery, and the

various specialties, as well as Medical Ju prudence, the Economics of Medicine, the History of Medicine. The book freely illustrated.

INDEXED CATALOGUE OF THE SURGEON-GENER LIBRARY OF THE UNITED STATES AN Authors and Subjects. Second Series. ume XVI. Skinko to Styanus. Governmental Printing Office, Washington, 1911.

The Indexed Catalogue of the Surge General's Library of the United Sta Army is so well known to medical men world over that it is unnecessary to scribe it. It is only of interest to note to the second series has already advanced far in the alphabetical list of references

THE PRACTICAL MEDICINE SERIES. Edited by P. Head, M.D., and Charles L. Mix, M. Volume X: Nervous and Mental Diseases, Hugh T. Patrick, M.D., and Peter Bas M.D. The Year Book Publishers, Chical 1911. Price \$1.25.

Last year, our readers will recall, referred in terms of praise to the excell summary of current literature on Nerw Diseases by Dr. Patrick in this well-kno annual. The work this year has been deequally well, the illustrations are excelled and the type is of such size that it can easily read.

ONE HUNDRED SURGICAL PROBLEMS. By Jan G. Mumford, M.D. W. M. Leonard, Bost 1911.

There are many surgeons of large perience, trained to accurate recording their cases and gifted with the power logical deduction, who could write a bo of practical experience which would be teresting and instructive. There are f who have the personal gift of vivida and the literary style which character all of Mumford's writings. These ca records are roughly classified and form memorial of surgical interventions whi if not always successful in their outcor were founded on sound reasoning, in so cases almost preternatural intuition, a always on the application of the best mode methods of practice.

### CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

This month has brought us the grim realization of a universal coal strike, and at the time of writing there seems little prospect of peace. The cessation of the coal supply has brought home to us in a most vivid manner our utter dependence upon it as a source of fuel, as one industry after another is becoming paralyzed and thousands of workers are exposed to starvation in consequence. In London the hardships of the strike have not as yet been greatly felt, beyond the inconvenience of a restricted train service, but in the manufacturing towns of the north the distress has already become acute. It is possible that this great strike may mark the beginning of the end of the practical monopoly of coal as a source of fuel. Renewed efforts will be made to find an efficient substitute, and it is a significant fact that the largest oil-driven vessel in the world paid a visit to the Thames during the first few days of the strike. If oil-driven engines are found to be efficient for battle-ships and large liners, an enormous saving in coal will be effected, and the whole commerce of the nation should not again be held up by a single industry. The hospitals are among the sufferers, especially those which have not large storage places, and one hospital at least has had to buy coal at double the usual price, while at another hospital it has been decided not to admit any more new patients until the strike is over. The weather unfortunately remains cold and damp, which greatly aggravates the sufferings of the poor.

After a silence of four years the Royal Commission on Vivisection has at length issued its report. The delay is partly due to the death of two of the commissioners and the illness of others, but the remaining commissioners are unanimously agreed in their findings. Unfortunately the report is rather behind the times, as it only deals with the evidence given before it, and that evidence was given in the years 1906 to

1908. In consequence no mention is made of Flexner's work on spotted fever and infantile paralysis, nor of the results obtained by preventive measures against typhoid fever in the Indian army and also in the United States army. The report deals with certain charges made by antivivisection witnesses against the administration of the Vivisection Act, and against men licensed under the act. The commissioners dismiss the charges as groundless except in one case where they rebuke a licensee. The report recalls at great length the advantages gained by the help of experiments on animals during the past thirty years, and points out that this increased knowledge has also been of benefit to the animal world, as animal diseases are now so much better understood. With regard to inoculations and such-like experiments, which are 95 per cent of all experiments on animals in this country, the commissioners are agreed that, in the large majority of these cases, the animals do not appear to suffer pain. Turning to the moral side of the question the commissioners come to the conclusion that "experiments on animals, adequately safeguarded by law, faithfully administered, are morally justifiable, and should not be prohibited by legislation."

The appeal issued by the University of London for money to build a new headquarters for itself has already been successful in obtaining promises of nearly a quarter of a million in the course of one week. An anonymous donor has promised to give £100,000 toward the acquisition of a site, and the Drapers' Company has offered to erect a new Senate House and administrative offices at a cost of £60,000. The proposed site is just north of the British Museum, and is thus in the very center of the metropolis. The new buildings, when completed, will form a convenient rallying ground for the graduates of the university, who will be able for the first time to feel that they belong to a corporate and visible alma mater.

One of the immediate results of the in-

troduction of the National Insurance Act has been absolute stagnation in the sale of medical practices. A doctor in the Bankruptcy Court attributed his failure to the fact that he had been unable to get any offer for his practice owing, he said, to the "slump" caused by the act. Medical agents declare that the sale of practices has been paralyzed in places where a large proportion of the population will come within the scope of the Insurance Act, but with high-class practices in the West End and the residential districts of large provincial cities the demand has increased, as such practices are least likely to be disturbed by the act. Meantime the negotiations between practitioners and the Insurance Commissioners have not eventuated in any agreement, and the government spokesmen are beginning to threaten that, unless an agreement is reached, the act will be worked without the medical benefits. As, however, "free doctoring" has been one of the most prominent features of the bill, it seems unlikely that such a drastic step will be taken.

An interesting test in regard to an alleged malingerer was carried out by a medical referee in a county court compensation case recently. A laborer while in the employ of a company had his leg injured and was granted compensation. The company alleged that the man had completely recovered the use of his leg but was shamming incapacity, and was stiffening his limb on examination so that it could not be bent. The medical referee attached to the court proceeded to put the defendant under an anesthetic, and while the man was unconscious, examined his knee. He found that it then moved easily and freely, and the judge therefore terminated the compensation award.

The militant suffragettes had a great demonstration this past month. Armed with hammers, stones, and similar implements they proceeded in small parties to the Strand, Bond Street, and other well-known centers, and commenced a window-smashing parade. It was a sad sight to see large glass windows with holes in them and large star-shaped fractures. Nearly two hundred were run in by the police and received sen-

tences of hard labor for this wilful damage Others were not saved by the police before they had come in for rough handling, and one woman at least was pushed into a cal and most of her clothes were thrown in after her. So acute was the apprehension on the part of the owners of windows that no woman with a muff could look into window without finding several assistants hovering about, and intimating that she had better step inside or move on. A few days after the prime instigators of this movement were arrested for conspiracy, and will in due time have to take their trial. Miss Pankhurst has so far evaded arrest, and it is believed that she is safely out of the

The interhospital Rugby football cup was won again by Guy's Hospital, after a good game in the final against London. The usual demonstration took place on the ground before and after the match.

#### PARIS LETTER.

BY M. A. C. TUCKER, M.D.

The Paris medical body has heard with unanimous satisfaction that the court of appeal of the Seine has just invalidated the judgment of the civil tribunal below ordering Dr. Bazy to pay five thousand francs damages for—so it was alleged by plaintiff—"having forgotten two compresses in the abdomen of a woman patient, he having operated two years before for an ovarian cyst." The surgical operation had taken place in one of the leading hospitals of this city, and naturally gratis pro Deo.

In giving their written decision, the higher judges pointed out that the complainant owes her life to the eminent surgeon, and moreover that it has been in no way established that he had been guilty of the professional fault brought against him. M. Millerand, the celebrated advocate and actually French Secretary of State for War, pleaded for defendant, assisted by a medical barrister. All professional gentlemen consulted on the matter were of one opinion, viz., that the story is, to say the least, absurd. Dr. Bazy being one of the most esteemed and respected professors of the

capital, the sensation was great at the outset of the trial when he was sued and first tried, and when the tribunal had awarded the plaintiff the said five thousand francs instead of the fifty thousand demanded.

Over every one of the public buildings are written in conspicuous characters "Liberté, Égalité, Fraternité," according to which one would feel inclined to think that the territories of the French Republic constitute a paradise of freedom and of brotherly feeling for mankind. Unfortunately "liberté" in many cases is only but a name. In this free and democratic country it is forbidden to employ nurses in religious garbs. It had universally been the cherished custom to have recourse to the services of Sisters of Mercy or of other religious orders both for hospitals and private nursing, but this is now a thing of the past, as can be judged by this passage of a letter lately sent to a dispensing doctor of Périgueux, the chief town in the southerly department of the Dordogne: "Sir: You have taken no notice of our intimation and informations as to the formalities to be fulfilled in order to obtain permission to employ religious nurses in your clinic, and four Sisters of Saint Martha are employed by you. I have lately been asked by the prime minister to send him a list of establishments of your kind existing in my department with a view to enjoin them to have the congregationists dismissed without delay, and I must warn you, in case of the administrative injunction not being complied with, the matter will be placed in the hands of the public prosecutor." document is signed and sealed by the Pre-Governor of the Dordogne. Naturally enough, the whole of the medical corps in France loudly protest against this tyrannical and ridiculous measure.

The Medical Syndicate of the Seine has recently forwarded a memorandum to all the members to the effect that in order to assist the police in their efforts to abate the quack doctor nuisance it would be advisable for all genuine practitioners to send to the police prefect their cards and addresses, and also send notice of removal in every case of change of residence.

In one of the French colonies, New Caledonia to-wit, the authorities have decided to award in guise of bounty a sum of ten francs to all mothers for their own use for each declaration of birth. The object of such a measure is to put an end to the great tendency of the female natives to either abandon their offspring or cultivate their too frequent abortive practices.

It has been calculated that the infantile mortality under twelve months of age is an average of 143 per annum for France out of every 1000, whilst in the United Kingdom the proportion is 121 for the same number.

It has only recently been decided to establish open-air schools as the best means of preventing or curing infantile tuberculosis. Such schools will naturally be developed without the French towns, with the option for parents and guardians to choose between partial or full board. It is a curious fact that such an enlightened nation as the French should be behind all other countries in so vital and important a matter

Up to the present the wintry weather has been particularly mild over here, and were it not for a most serious outbreak in numerous districts of scarlet fever and measles, the general public health could be considered as most satisfactory.

The Official Journal has just published the birth and death bulletin for the past year. The births show a difference of 70,583 over the deaths. That would be an optimistic outlook but for the fact that it is not due to the increase of births, but to the decrease of mortality, which has been the lowest ever recorded, exactly 703,777, which means 179 deaths for every 10,000 inhabitants.

#### POSTURE IN LABOR.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: In your valuable publication for February there was an article on "Posture of the Lying-in Patient." I beg a little space to consider posture in labor; and although some of the statements which I will make are against all of the obstetrical canons of the past one hundred and fifty

years, yet such canons are not infallible. Why should the German woman give birth on her right side (if she does), the English woman give birth on her left side, while the woman in the United States must lie on her back? These attitudes must be the result of fashion rather than of science. It became a fashion that the woman give birth in bed, but when we cast fashion or custom aside, and consider the phenomena of labor, the bed is seen to be illy adapted for such a purpose. And yet so well established is this custom that it is quite useless to argue a more rational, speedier, and an equally safe method.

We would fear ruptured perineums and postpartum hemorrhage if we delivered our patients in any other attitude than one of the three above mentioned, and yet we have never had experience outside of these methods, neither perhaps have our authors and teachers.

It would be well if several obstetrical clinics would study the position of kneeling and squatting to see the effects in labor. My experience has been limited to the kneeling posture, and I never saw easier labors.

This is not an academic question. We are having more and more trouble in labor cases. The head of the fetus is larger than of old, while the pelvis of civilized woman tends to become of lessened diameter. To compensate we have the forceps and anesthesia, but in the process of birth we should strive to return to nature.

The natural attitude of a woman in labor is on her feet, and the present method is as contrary to all natural law as to defecate with the feet off of the floor.

A woman in labor may truthfully be compared to a constipated person who endeavors to expel feces, and without violation of true etymology a constipated person in such act is in a state of parturition, however unusual the definition. The phenomena of the expelling forces bearing on the child and bearing on a fecal mass are almost identical. But the effect of blood on man has caused him to think that there is no analogy between the two processes, yet one is as natural a process as is the other, ex-

cepting contingencies of danger. It is contingencies of danger, or the fear of cidents, which must be put aside if we to give the woman in labor the benefit the normal positional mechanism of la

We are not conversant with the met of delivery in Indo-China, for instance, if quoted it would be met with the rejoin that we are wiser than they, and yet may not be if we do not follow nate processes in labor—at least not wiser in particular.

We do our best to imitate nature causing the woman to assume the lithout position in the last throes of labor, who position she would instinctively assume, we deprive her of the effect of grave. The kneeling or the squatting, the No American Indian attitude, is the positive par excellence in order to accomplish livery with facility.

It is evident that nature never design that the primipara should suffer for severate teen hours, and the multipara twelve how None of the lower animals, except in usual cases, suffer so long. They assumatural attitudes, and if restrained by fears of their owners, and made to assumantificial postures, have their labors may prolonged, without compensatory benefits

Thos. R. Evans, M.D.

McKendree Hospital, W. Va.

#### ARGYROL IN BURNS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: I have been using a 25-per-c solution of argyrol in water to paint burns of slight degree, and 25 per cent argyrol in petrolatum, with a few drops water added to cut the grains, for bu of greater extent and severity. These plications will stop the pain instantaneou and will control the inflammation in a sh time if the skin is not destroyed, and v save a great deal of skin which is on border-line of loss. This dressing show only be used for a few days, then the us dressings applied. I do not know wheth argyrol has ever been used for this purpo Sincerely yours, before.

PAONIA, COLORADO. N. B. NEWCOMER

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### ORIGINAL COMMUNICATIONS.

CONCERNING THE TREATMENT OF VARIOUS FORMS OF OCULAR SYPHILIS WITH SALVARSAN—A CLINICAL LECTURE DELIVERED IN THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

BY G. E. DE SCHWEINITZ, M.D., Professor of Ophthalmology.

The happy results of the treatment of constitutional syphilis with salvarsan, ordinarily known as "606," are well known to you, but it is proper that you should witness the effects of this remedy on syphilitic lesions of the eye, and therefore I shall devote a portion of this hour to a consideration of this agent under these circumstances. While Dr. Laird is preparing his fluids (and he will presently give one of the patients an intravenous injection of salvarsan) I shall call your attention to the clinical history of the patients here presented.

Case I.—Bilateral parenchymatous keratitis of syphilitic origin; result of salvarsan treatment. The case history of this patient, a man aged thirty-two, is as follows: The patient's father died at the age of fifty years as the result of a hemorrhage produced by coughing. For two years prior to his death he had been in poor health. The patient's mother, aged seventy-three, is still living. Ten years ago she broke her arm, and eight months later gangrene set in and the arm was amputated. One year later gangrene developed in one foot, and this member was also amputated. One year ago gangrene appeared in the other foot, and again amputation was required. The patient had eleven brothers, but only two are living, and these are in good health—one, however, is slightly deaf. All those who died perished before they were seven years of age. sister is living and in good health. The patient is married, and his wife, ordinarily in good health, has been ill during the present spring with rheumatism. He has four children; all are living and in good health. His wife has not had any miscarriages.

The patient's own health has been singularly good; in point of fact, he never has had any serious illness. He denies syphilis, but acknowledged urethritis twelve or thir-About one and one-half teen years ago. years ago the right cornea was injured, and there is now a curved scar extending from the inner end of the right eyebrow along the side of the nose 1½ inches in length. During July of the present year a hot cinder flew into the left eye, and subsequently he thinks he "caught cold," as he expresses it. Prior to that time this eye had been weak, and he reports that an ocular examination which he underwent indicated that his vision, even with a glass, was only one-half Since the cinder accident the eye has gradually become more inflamed, but he has suffered little pain, and within the past two weeks the vision of the other or right eye has grown defective, and the eye, to use his own expression, has become quite misty. When he reported for examination he was then examined by my associate, Dr. Thomas B. Holloway.

Vision of the right eye was 5/30; there was slight ciliary injection and a large quadrant of the cornea was steamy and hazy, and through it radiated a number of lines of infiltration which probably repre-

sented foldings in Descemet's membrane. At the corneal periphery above there was a dusky-red marginal vascularization. pupil was 4 mm. in diameter and reacted only moderately to light. There was no rise of tension, but the cornea was too steamy to permit ophthalmoscopic examination of the fundus. The vision of the left eye was hand movements at 1/2 meter. The entire cornea was steamy and needle-stuck, while a few saturated dots in the deeper layers were visible, and numerous broad striæ, radiating all through the parenchyma of the cornea, were easily detected. Above and below there was marked vascularization of the corneal margins, both deep and superficial in character, associated with a decided general ciliary injection. A mydriatic dilated the right pupil with freedom, but had little or no effect on the left pupil.

The Wassermann test was strongly posi-He was sent to the hospital, and an intravenous injection of 0.6 gramme of salvarsan was administered by Dr. Laird. After waiting for forty-eight hours, during which period of time the patient was somewhat nauseated, mercurial inunctions, 1 drachm daily, were systematically employed; locally hot compresses, 5-per-cent solution of dionin, and atropin to maintain mydriasis. At the expiration of three weeks the vision of the left eye—that is, of the eye which when he first reported for examination showed the greater involvement-had distinctly improved, the limbus vascularizations had practically disappeared, and only a slight pericorneal flush was demonstrable. The cornea was still slightly steamy, and a few saturated dots were visible in its paren-The iris could be well studied, but regained its normal color, and the pupil was reasonably dilated. Uncorrected vision was 4/60.

In the meantime the right eye, however, in spite of this treatment, had failed to improve—indeed, it had grown decidedly worse, with increase of the vascularization, elaboration of the haziness of the cornea and a greater development of the striæ of infiltration through its parenchyma, and the deposition of flocculent opacities in its stroma. Vision was reduced to counting

fingers at 8 inches. The mercurial tr ment was continued, together with the 1 applications already described. The V sermann test is still positive, and Dr. La who is now ready, will give an additiintravenous injection of 0.6 gramme salvarsan. (This injection was given.<sup>1</sup>)

Before proceeding to the remarks will desire to make concerning these patient shall demonstrate another syphilitic correlesion, as follows:

Case 2.—Double parenchymatous keras the result of inherited syphilis; result salvarsan treatment. The case history this patient, an unmarried man aged twen one, is as follows: Concerning his fam history I have no data. The patient den syphilitic infection. Except that he l worn glasses since he was fourteen ver old, and the left eye has always been we and watery, he knows of no ocular troul until his present difficulties began-that to say, in July of 1910, when the right e became inflamed, and two months later t left eye was involved. He was referred his family physician, Dr. Mendenhall, to oculist, who correctly diagnosticated t disease to be of syphilitic origin and treat him vigorously with mercurials and iodide but with little benefit. At the time I fir examined him, on the 29th of December 1910, the vision of each eye was the abili to distinguish hand movements at 1 meter On the right eye there was a large patch vascularization occupying the center ar middle upper third of the cornea. Benea the vascular area in the deeper layers of the parenchyma of the cornea were a number deeper deposits joined together by radiating lines, which were situated in the corne stroma, and above these were a few supe ficial infiltrates. The corneal epitheliu was edematous and extremely hazy. The was well-marked cyclitis. Precisely th same condition of affairs, if anything mor marked, was present in the left cornea. Th

<sup>&</sup>lt;sup>1</sup>There was absolutely no reaction after the injection Improvement of the right eye began within twenty-for hours after the salvarsan had been administered, as within a week an astonishing improvement occurred, the vascularization, haziness of the cornea, etc., quickly su siding. The patient continued at intervals the mercuri inunctions, and at times iodide of potassium and bichloris of mercury, and left the hospital thirty days after the second salvarsan injection with both corneas practical clear, and uncorrected vision 6/12 in each eye.

1

patient was admitted to the University Hospital; a Wassermann test was made, as was also a Von Pirquet test. The former was actively positive, the latter negative. In addition to the corneal lesions, there are other stigmata suggesting inherited syphilis, to wit, the notched central incisors of Hutchinson, a somewhat dish-shaped appearance of the face, and a few rhagades at the angle of the mouth; there are no nodes on the tibia, but there is some enlargement of the postcervical glands.

On the date of his entrance into the hospital, the vision of each eye was the ability to detect the movements of the hand. From the 29th of December, 1910, until the 17th of May, 1911, five injections of salvarsan, four intravenous and one intramuscular, were given at my request by Drs. Siter and Uhle, as follows: January 18, 1911; February 12, 1911; March 8, 1911; March 30, 1911; and May 14, 1911. During the intervals between the injections large doses of iodide of potassium, from 60 to 100 grains per diem, were administered. Locally, atropine, dionin, and hot compresses were employed.

At first there was little or no improvement, but after the second salvarsan injection, and each one of these injections consisted of 0.6 gramme, there was decided improvement, evidenced in the subsidence of the corneal lesions and the cyclitis. March 18th the vision of the right eye was 6/22 and of the left eye 6/30. Improvement from that date was rapid, and the corneal lesions markedly disappeared. paresis of the external rectus of the left eve which had been evident on his arrival now became annoying, because he had sufficient sight to recognize the double images. the day of his discharge the eyes were perfectly white and quiet, the central parenchymatous lesions were still evidenced in the haziness of the cornea, but this was the only remnant of the severe ocular inflammation from which he had suffered, and vision of the right eye was 6/12 and of the left eye 6/15. The patient returned to his home, and remained under the care of his physician, taking from time to time iodide and bichloride.

He returned a week ago, and I show him to you to-day practically a cured man, the vision of each eye being 6/12. A Wassermann test is doubtfully positive, and for safety's sake he is to have an additional injection of salvarsan.

Case 3.—Double parenchymatous keratitis in a child the result of inherited syphilis; effect of salvarsan. The case history of this patient, a girl aged seven, can only be briefly given because of inability to interview those from whom information could be obtained. The child had been neglected, probably cruelly treated, and whether any remedies had been applied for the relief of her corneal lesions is not known. When admitted she had an intense bilateral parenchymatous keratitis, with photophobia so great that it was with difficulty an examination was made. vealed in equal severity in each eye intense ciliary congestion, a diffuse, thick interstitial deposit throughout the corneas, with numerous blood-vessels thickly set in the layers of the cornea, the vascularity being especially noteworthy in the upper portions of the cornea, and the limbus on each side being very red and swollen. Not only was the Wassermann reaction actively positive, but other physical defects indicated the presence of syphilis, namely, a somewhat dwarfed stature, a rather coarse flabby skin, a sunken nasal bridge, and vertical notching of the central incisors—in other words, the The child. so-called Hutchinson's teeth. however, is unusually intelligent, and in spite of her afflictions has a very happy Hot compresses, dionin, and disposition. atropine were used locally, and four injections of 2 decigrammes of salvarsan were \* The first of these was not very successful, owing to the smallness of the child's veins and the difficulty of introducing the fluid, so that in all probability any influence that it may have had is so trifling that it need not be counted. Three of the injections, however, all intravenous, were most satisfactory and were given at intervals of about four weeks. In each instance the child for a day and a night was greatly depressed, was nauseated, and had a slight rise of temperature, which, however, never

exceeded 100° F. Almost immediately photophobia subsided, with marked reduction in the activity of the ciliary congestion and the general vascularization of the cor-Within three weeks the child was able to open its eves readily and walk around the ward, could recognize colors and the outstretched hands, the previous vision, however, having been only light perception. The child continued under observation for about four months, during which period mercurials were given. A slow improvement was evident, although at the time of her discharge from the hospital (and she is now comfortably placed in a school for the instruction of the blind) there had never been sufficient clearing of the cornea to enable the patient to have letter vision, and vet, considering the character of the lesion on her entrance and the density of the deposits and the high grade of the vascularization, the improvement was most notable.

Let me now call your attention to two cases of acquired ocular syphilis, the patients having submitted to salvarsan treatment in an acute stage of the process.

A man, aged thirty-seven, three days prior to his admission to the hospital noted, together with sharp pain, an inflammation of the right eye. Examination at that time demonstrated a vision of 6/9, with typical ciliary congestion, muddiness of the iris, and one large and two smaller reddishvellow nodules at the inner pupilary border, the iris beneath being attached by a synechial band to the capsule of the lens. This patient, therefore, had the so-called true syphilitic iritis, often termed iritis papulosa, in which the papular iris syphilides appear in the situation which I have described, and the remnants of which are but faintly visible now, or sometimes at the ciliary border, very rarely in the mid-breadth of the iris. patient gave a clear history of primary infection six months prior to the ocular involvement, and of treatment which lasted only a short time—that is, until the disappearance of the first cutaneous syphilitic Urine and blood examinations were normal, and the patient was given 0.6 gramme of salvarsan and suffered no in-

Witi convenience from the injection. twenty-four hours there was marked i provement, which in another twenty-fo hours was a little less manifest, as the e appeared slightly more flushed, althou not as much flushed as it had been primari Forty grains daily of iodide of potassis were now administered, and eight days a ter the first injection of salvarsan a secon intravenous injection of 0.6 gramme w The improvement was administered. rapid after this second injection that at t expiration of nine days the iris had assum practically a normal appearance, the or remnant of the very considerable mass papular syphilides which had been prese when the patient was first seen being slight irregularity of the iris border at the point of their original situation. Vision entirely normal. The patient is now taking iodide of potassium and mercuric bichloric and has been ordered to report from tin to time. As you see, the eye is practical free from all of its former disabilities.

An even more surprising elimination syphilitic lesions from the iris occurred one of my patients, whom I cannot he demonstrate, who appeared in the early po tion of last July with a single papular syph lide of the right iris. This patient's primar infection had occurred eleven months price to the development of the iritis. He ha submitted to most active mercurial medical tion, and had also taken sodium cacodylat In spite of this, the iritis which I describ to you developed, and the Wassermann re action was active. At my request an inje tion of 0.6 gramme of salvarsan was give to him by Dr. Uhle. Within forty-eigh hours improvement was manifest; at the expiration of nine days the pupil wa slightly flattened up and out at the original position of the syphilide, which could hard be detected, and within a period of consider ably less than a month, even with carefu loup examination, hardly a trace of th original difficulty could be found, vision in each eye being 6/4.

Naturally, you will inquire whether this rather free use of salvarsan in full dose has been followed by any untoward symptom or unpleasant reactions. As you know

during the earlier days of the use of this remedy many violent reactions were noted and have been recorded: for example, a sharp rise of temperature, nausea, vomiting, diarrhea, intense headache, albuminuria, even active nephritis, herpes, and in certain parasyphilitic conditions, for example, tabes, violent pains of a lightning-like character. Naturally, these reactions were attributed to the toxicity of the drug, especially as some of the symptoms resembled those produced by arsenical poisoning. Owing largely to a discovery of Wechselmann's, it has been found that if the water used in the preparation of the saline solution, just as you have seen Dr. Laird prepare it, is not only sterilized but also distilled, these reactions are practically eliminated, and this has been well described in a recent communication on this subject by Dr. Homer F. Swift and Dr. Arthur W. M. Ellis, working in the Rockefeller Institute for Medical Research in New York. It is probable that unfavorable reactions occur when the water contains bacterial elements. Wechselmann, as quoted by Swift and Ellis, thinks that saprophytic microörganisms develop in distilled water which has stood for some time, that a certain amount of proteid matter is dissolved from these into the water which passes through the filter, and when injected in the circulation gives rise to the febrile reaction.

In the present series of cases no reactions of any moment occurred, with the single exception of some nausea and vomiting, save only that one of the patients after his first injection for some hours was in a state of exhilaration, almost like that of an intoxicated person, singing and laughing and saying foolish things. The temperature charts do not record any rise of temperature except twice in the case of the second and third patients, who exhibited on the evening of the day of the injection on one occasion a temperature of 100°, and on another a temperature of 100 2/5°. It would therefore seem to be important, whether the salvarsan is given in full dose (0.6 gramme) or in smaller doses frequently repeated, that freshly distilled water should be utilized for the preparation of the salvarsan and the

normal saline. If salvarsan is given in repeated doses, in the opinion of many authorities, the dose should not exceed in men 0.5 gramme and in women 0.4 gramme, in order to lessen the danger of toxicity. In children the dose should be smaller.

You may inquire whether this drug deleterious influence anv has vision, such, for example, as atoxyl has, which, as you know, in many instances has produced great disturbances of sight from optic nerve atrophy with primary involvement of the retina. Both from the clinical standpoint, as well as from that which is reached by experimental work, it may be stated in general terms that arsenobenzol has no ill effect upon the healthy optic nerve Igersheimer failed to produce apparatus. with repeated injections of Ehrlich's remedy toxic symptoms, ophthalmoscopic changes, or microscopic lesions in rabbits, although in cats he succeeded, after the establishment of a subacute intoxication, in demonstrating degenerative changes in the ganglion cells of the retina and slight changes in the optic nerve. In general terms it is considered wise not to administer salvarsan in simple, non-inflammatory atrophy of the optic nerve, but specific optic neuritis does not of itself contraindicate the drug. Igersheimer has also noted the value of this drug in congenital syphilis, and in his experience after its use there is a negative Wassermann reaction in over one-half of the cases.

Certainly in these cases of congenital syphilis, particularly when the lesions develop in the form of parenchymatous keratitis, such as three of the patients whom I have exhibited possessed, it is important to combine with salvarsan mercury or iodide of potassium, or, more accurately, to administer these drugs in the intervals between the injections in the manner which I have already described. It is possible that the mercury and the iodide liberate the toxic elements of the infiltrates, thus enabling the salvarsan to exert its specific influence upon them. It has often been stated that salvarsan produces little or no effect on syphilitic parenchymatous keratitis. The gratifying results, however, in two of the patients whom I have demonstrated to you clearly show its therapeutic value in this disease. It is possible that the first patient should not be regarded as a case of inherited syphilis, and that we deal with a parenchymatous syphilitic keratitis of the acquired variety, although this is not quite certain. In the other two patients there is no question that the syphilitic manifestation was an inherited one.

The patients with syphilitic iritis of the acquired type have reacted to salvarsan in the usual manner, and furnish additional evidence that in acute syphilitic processes in the uveal tract there is no remedy which equals salvarsan, especially if it is also com-

bined with mercury and iodides, in rapidity with which it eliminates the lesion I may say, although I do not exhibit patients, that I have used Ehrlich's rem a few times in syphilitic exterior oci muscle palsies with entirely disappoint results. This experience is in accord v that which has been recorded by of observers. In concluding I must ag warn you that this remedy is not with its dangers. How to minimize them I h explained, but I beg you to remember t in giving repeated doses great care m be exercised in watching their effects, pecially in the kidneys, and the small rather than larger doses named should

### ACTION OF DIFFERENT AGENTS UPON THE SECRETION OF MILK.

BY ISAAC OTT, M.D.,

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AND

JOHN C. SCOTT, M.D., Demonstrator of Physiology.

Among the earlier experimentalists upon this subject was Röhrig.¹ He used goats, and an aspirator to empty the udder. He found strong muscular movements increased the milk secretion from 9 to 40 drops. Jaborandi also increased the secretion. Chloral reduced it, but after repeated doses it occasionally increased it to a considerable extent. It was given subcutaneously.

Atropine arrested the secretion. Strychnine by the vein increased the milk in a curarized goat. Digitalin and caffeine also increased the secretion. Bromide of potash reduced it. He also irritated several of the nerves going to the mammary gland in the goat, and thought that specific secretory nerves were improbable.

Bouchacourt<sup>2</sup> found that the placenta of the sheep when fed to women increased the milk secretion.

Lederer and Prizbrams found that injections of extracts of the fresh placenta of the goat into the vein of a goat called out in three to ten minutes an increased milk secre-

1Virchow's Archiv, Band 67, S. 119.

tion, which disappeared in a half to t minutes. Heating placenta at 60° to 6 C. from half an hour to an hour destroys milk-producing activity. We used the p centa of woman, which immediately af delivery was placed in a sterile jar a chloroform added to it. It was then dr carefully at air temperature. Some of powder was rubbed up with distilled wat filtered through cotton, and injected in the vein of the goat. It increased Basch<sup>4</sup> injected extracts of secretion. placenta into adult animals who at one ti had lactated and produced milk. He a injected these extracts into children whom the milk secretion had ceased, but placenta renewed it. He concludes that so-called "witches' milk" is due to a passa into the fetus of a hormone circulating the blood of the mother.

Aschner and Grigorin<sup>5</sup> experiment upon guinea-pigs. They used the placer subcutaneously for several periods. T injection was not in the vicinity of to mammæ. In animals who had been mother



<sup>&</sup>lt;sup>2</sup>Société de Biologie, Feb. 1, 1902. <sup>2</sup>Pflüger's Archiv of Physiologie, Band 144, Heft 940, S.

<sup>&</sup>lt;sup>4</sup>Münchener med. Wochenschrift, 1911, Iviii, p. 228 <sup>5</sup>Archiv f. Gynäkologie, Band 94, Heft 3, S. 766, 19

they found in three to four days' colostrum and at the end of the week considerable milk. Heating the watery extract of the placenta or the placenta itself for ten minutes did not prevent the galactagogue action of the placenta. In virginal guinea-pigs the daily subcutaneous injection of placenta called out a marked secretion of milk. They also found fetal extract subcutaneously called out a milk secretion. Pilocarpine had no effect in animals who had been mothers but were free of milk. They also found watery extracts of fresh ovaries minus the corpus luteum by subcutaneous injection produced a marked milk secretion. corpus luteum they obtained no actual secretion of milk. They also found in milk-free animals, but who had undergone lactation, that every lymphagogue when given subcutaneously called out a marked secretion of milk.

Schäfer and Mackenzie found that boiled infundibulin and boiled corpus luteum increased the secretion of milk and that the anterior part of the pituitary had no effect. They obtained no effect from pilocarpine, eserine, or nicotine. Infundibulin elevated the blood-pressure, whilst corpus luteum generally caused a fall of arterial tension.

Dr. Mackenzie has found extracts of both the involuting mucous membrane and extracts of the mammary gland itself to have a marked galactagogue action. He also found that atropine did not interfere with the action of any of the above internal secretions which acted as galactagogues.

Our experiments were fifty in number, and were made on lactating goats. The same plan in experimentation was followed as described in a previous paper. We made experiments with boiled thymus and boiled pineal body. We found both increased the secretion of milk. We also found that boiling the mammary gland did not prevent its galactagogue action, which has been shown by Mackenzie to increase the flow of milk. We then tried the effect of a dose of atropine, 1/50 of a grain by the vein, before the injection of the corpus luteum, infundibulin, and pineal gland, but they still in-

creased the milk secretion, although not to as great an extent as before the atropinization. We have previously shown that the injection of the second dose of infundibulin is not followed by as great a secretion of milk. In the lactating goat we tried several successive injections by the vein of ½ Cc. of infundibulin. The normal milk secretion was 4 drops every five minutes. The first increase was 101 drops, the second 32 drops, the third 12 drops, the fourth 20 drops, the fifth 10 drops, and the sixth 7 drops.

The mammary gland is very sensitive to infundibulin; even 1/1000 of a drop increased the milk secretion a drop, whilst 1/100 of a drop increased it 5 drops.

We found pilocarpine, 1/20 grain by the vein, to increase the milk secretion to a marked degree. If, however, 1/50 grain of atropine was given just previous to the injection, then the pilocarpine was without effect. If we waited forty-eight hours after the venous dose of atropine (1/50 gr.) and then injected 1/3 grain of pilocarpine intravenously, then the flow of milk increased to a small extent. Digitalin increased the secretion of milk. Caffeine citrate, eserine, nicotine, and muscarine had no effect in augmenting the milk secretion.

Atropine arrested the milk secretion. Antipyrin reduced the flow one-half. We also studied the effect of proto-albumose and deutero-albumose. They caused a considerable increase in the secretion of milk. Peptone increased the secretion, but not so much as the albumoses. Glucose (gr. xx) caused a marked increase. Sodium chloride increased it to a marked degree. Potassium chloride also increased it, whilst calcium chloride only slightly augmented it.

The question now arises, how do these agents increase the secretion of milk? Is it nervous, vascular, or cellular, or a combination of all of them? Goltz and Ewalds after previous extirpation of the lumbar cord in dogs found milk to be secreted after pregnancy. Starling and Jane Lane-Claypon from experiments found a hormone which they believed to be generated in the embryo, and through the placenta passed into

<sup>&</sup>lt;sup>6</sup>Proceedings of the Royal Society, Series B, No. B 568, vol. 84, p. 16.

THERAPEUTIC GAZETTE, October, 1911.

<sup>\*</sup>Pflüger's Archiv, Band 68, S. 885, 1896.

the blood and then to the mammary gland. The Blazek twins had a common circulation, but independent nervous systems, yet pregnancy and delivery in one was followed by lactation in the glands of both. Mackenzie found that atropine, which paralyzes secretory nerves, did not prevent the galactagogue action of infundibulin and corpus luteum. We have found the same to be true for thymus and the pineal gland.

Mironoff,9 in 1895, a Russian physiologist, in a primiparous goat resected to the length of two centimeters all the nerves of the mammary gland a month and a half before the time of delivery. When this arrived the mammary glands nevertheless enlarged as in a normal animal and secreted in the usual manner. He repeated the experiment with a similar result. In experiments upon goats10 on the external spermatic nerve, independently of the branches whose excitation caused erection of the nipple, there were two other branches whose irritation caused at the same time a secretion and a change in the circulation. In another experiment upon a bitch the excitation of the peripheral end of the mammary nerve resulting from the union of the fourth and fifth lumbar pair lowered blood-pressure in the mammary artery and gave out an abundant jet of milk when the nipple was compressed. Compression of the nipple of the other breasts was followed by only a few drops of milk. It would seem that this nerve was both dilator and secretory. Eckhard and Von de Sinety after cutting the external spermatic nerve found no influence of any account upon the quantity and composition of the milk.

Röhrig, by electric and all possible chemical irritation of the nerves going to the milk ducts, could not find any secretory nerves. It is probable that the positive results in the goat and bitch, which have been just described as evidence of secretory nerves, are vasodilator effects. The flow of milk by suction and its continuance in man can also be due to reflex vasodilator effects.

Schäfer thought he saw a greater v larity than normal in the mammary g when laid open, after the use of inf bulin. There is no doubt that the horn of the internal secretions cause incr lactation, and that there is probably a dilatation in the gland itself which play major part in the augmented secre aided by a stimulation of the gland rather in a direct manner than through secretory nerves acting upon the cells. and Scott have shown that corpus lu thymus, pineal body, and infundibuling vasodilators in the male genitalia, hence probable that they are vasodilators in mammary gland. Infundibulin is a dilator for the kidney; pineal body dilates the renal vessels.

Transplanted glands can secrete and certainly no nervous agent is conce in this case.

Appended are some of the experimen

```
Experiment 1.-Lactating Goat.
P. M.
       Gtt.
3.00
        12 in 5 minutes.
3.05
        10
3.10
        11
3.15
        53 Two grains of mammary glar
             the vein.
3.20
        40
3.25
        15
3.30
        10
      Experiment 2.-Lactating Goat.
P.M.
2.40
        11 in 5 minutes.
2.45
        12
2.50
        59 1/20 grain of pilocarpine.
2.55
        16 Profuse salivation.
3.00
3.05
        10
     Experiment 3.-Lactating Goat.
P. M.
2.45
         9 in 5 minutes.
2.50
2.55
3.00
         5 1 grain antipyrin by vein.
3.05
3.10
3,15
3.20
         1 1 grain antipyrin.
3,25
3.30
      Experiment 4.-Lactating Goat.
P.M.
       Gtt.
3.05
3,10
3.15
3.20
        17 4 grains of deutero-albumose.
3.25
3.30
         6
```

3,35

<sup>\*</sup>Gley's Physiologie, p. 722.

	Experiment 5.—Lactating Goat.			Experiment 9.—Lactating Gost.							
P. M.	Gtt.	•	Р. М.	Gtt.		•			•		
2.45	8		3.50	4							
2.50	9		3.55	4							
2.55	8		4.00	4							
3.00	20	10 grains glucose by vein.	4.05	_	1/2 Cc	٥f	2	20-ne	r-ce	nt extract of	
3.05	9		1.00	100						of the pitu-	
3.10	5				itay				ait	or the pita-	
3.15	4		4.10	30	itay	gia	ııu.	•			
3.20	4		4.15	4							
		Experiment 6.—Goat.	4.20	_	⅓ Cc.	inf.		likulin			
P.M.	Gtt.	zaperiment o. dout.	4.25	10	72 CC.	1111	4110	nouiii.			
2.55	12		4.30		⅓ Cc.	inf	1197	dibuli			
3.00	8		4.35	6	72 CC.	1111	u	uibuiii	1.		
3.05	10		4.40		⅓ Cc.	inf		dihadia			
3.10		30 grains of sodium chloride in	4.45	16	72 CC.	1111	um	dibuiii	1.		
	·	5 Cc. of water.	4.50		⅓ Cc.	in f		likulin			
3.15	33	o co. or water.	4.55	20	72 CC.	1111	ши.	IIDU:II	••	•	
3.20	10		5.00		⅓ Cc.	inf		dibulir			
3.25	10		5.05	25	72 CC.	1111	um	aibuiii	٠.		
3.30	9		5,10	16							
		Embariment & Cont	5.15	10							
		Experiment 7.—Goat.	3.13	10							
P.M.	Gtt.			Expe	eriment	IO.	1	Lactati	ing	Goat.	
2.45 2.50	5		Infundil	hulin i	is a 20_	ner.	-ce	nt ext	raci	t of posterior	
2.55	4		Intundi		part of					or posterior	
3.00	5	•			-		_		. y .		
3.05	-	15 grains calcium chloride.	P. M		every i	146	mıı	nutes.			
3.10	10	15 grams calcium emoride.	2.55	4							
3.15	5		3.00	4							
5.15	J		3.05	4	- /				-		
	_	Experiment 8.—Goat.	3.10			ot "	a	drop	ot	infundibulin.	
P.M.	Gtt.		3.15		1/1000	"	"	44	"	"	
3.00	6		3.20		1/500	"	"	"	"	"	
3.05	5		3.25		1/100	••	•••	••	••	••	
3.10	5		3.30	6							
3.15		10 grains of potassium chloride.	3.35	1	- /	"	"	"	66	44	
3.20	5		3.40		1/100	••	••	••	••	**	
3.25	4		3.45	3							
3.30	3		3.50	3							
3.35	2		3.55	2							

## A REVIEW OF THE DANGEROUSLY POISONOUS SNAKES OF THE UNITED STATES.

BY HENRY TUCKER, M.D.,

Curator of the Academy of Natural Sciences of Philadelphia; Fellow of the College of Physicians, etc.

The dangerously poisonous snakes of the United States are representatives of two families, namely:

First, the Elapidæ.

Second, the Viperidæ.

The subfamily, Elapinæ, have permanently erect perforated fangs in the fore part of the upper jaw. These fangs have a well-marked groove on the anterior surface, and excepting the reserve fangs are not followed by other maxillary teeth (Plate II, Fig. 1). The head plates are normal, two nasals, no loreal; scales smooth; subcaudals in two rows; pupil a vertical oval; body cylindrical; head not distinct. Two well-defined species are found in the United States.

The Eastern variety, Elaps fulvius, Linn (Plate I, Fig. A), coral or harlequin snake, rarely reaches a length of three feet. following description is of a specimen in my own collection: Head small, not distinct, snout bluntly rounded, eyes beady; scales smooth, brilliantly colored with vermillion, yellow, and black; the nose and anterior part of the head to the posterior end of the frontal plate, including the orbit, is black; a yellow ring covers the parietal from the posterior part of the orbit, to the angle of the mouth, followed by a black of eight scales width succeeded by narrow yellow of two scales, followed by red of seven scales. The body colors consist of

black and red rings separated by narrow yellow; the red spaces on the body are freckled with black; the tail is alternately black and yellow; the rings are complete, but beneath the colors are dull. There are several harmless snakes that mimic the poisonous coral, namely (Plate I): The scarlet snake, Cemephora coccinea (Fig. C); the scarlet king snake, Ophibolus doliatus coccineus (Fig. E); the Southern milk snake, Ophibolus doliatus clericus (Fig. D); the Arizona ring snake, Ophibolus zonatus (Fig. F); Le Conte's snake, Rhinochilus lecontei (Fig. G).

All these species have much the same color scheme as the harlequin, either in half or complete rings, but the arrangement of black bordered by yellow is never found in the harmless varieties. The coral snakes belong to a subfamily which includes the most deadly reptiles of the Old World, as the cobras and their allies of Asia, Africa, and the Malay Archipelago, and the many Australian representatives—the black, the brown, the tiger, and the death adder—and as their poison is similar, they must be ranked as reptiles distinctly dangerous to On account of their nocturnal and burrowing habits, sluggish disposition, and their comparatively short fangs, accidents are rare, and they do not receive the respect due them.

The Eastern variety ranges from South Carolina south-westward to Mexico. It is of burrowing habits, frequently found in decaying vegetation and under the bark of fallen trees; the food consists of lizards and smaller snakes.

The Western representative is the Sonoran coral snake (Plate I, Fig. B), Elaps euryxanthus, Kennicott. It is probably of similar habits, but differs somewhat in the arrangement of its colors; the black of the muzzle extending back over the parietals is followed by a yellow ring, then by a broad red band. The yellow rings on the body are broader than in fulvius, and the red spaces are not mottled with black. Distribution—Central and southern Arizona and northern Mexico.

The last and by far the most important family to be considered are the Viperidæ,

subfamily Crotalinæ, commonly and crectly known as the pit vipers, a most if tunate title, as it indicates their relation the true vipers and points out a remarka anatomical peculiarity, which at once disguishes them from all other reptiles; the serpents can be placed in one of the following genera:

1. Without rattle-Ancistrodon

Contortrix. Copperhead. Piscivorus.

(Water mocca Sistrurus—Top of head with l plates.

2. With rattle Crotalus—Top of head with s scales.

The pit is a deep hole situated betw the nostril and the eye, but on a lo It extends well into the maxill bone, is lined with epithelium, and connec with the brain by a thick nerve. The ternal layer of the lining of the pit continuous with the skin of the head, but entering the cavity changes to thin, nucleated epithelium. Beneath this is laver of fibrous connective tissue in wh the terminal filaments of the nerve end groups of granular substance contain round pale nuclei. This arrangement s gests a true sense organ, and as the fu tion of the pit cannot be explained, it i be, as suggested, the seat of a sixth se The pit is of gr unknown to man. practical value, as it at once enables us identify a dangerously poisonous snake.

The poison apparatus of the Crotal consists of a large pair of perforated fa immovably fixed in the anterior portion the upper jaw. The maxillary bone through its articulation with the lacrimal in fr and above and the external pterygoid b behind and below is freely movable and p mits the fangs, when not in use, to folded back against the roof of the mo (Plate II, Fig. 3). The mechanism of erection of the fang is briefly as follow The sphenopterygoid muscle, which has origin along the median ridge of the b of the skull, runs backward and is inser in the posterior end of the external pte goid bone, hence when this muscle contra the bone is drawn forward and pushes against the lower end of the maxilla. As the upper end of the maxilla is held by its articulation with the lacrimal, the tip of the fang must be directed downward and forward. The retractor muscle is the external pterygoid, which arises from the joint between the quadrate bone and the lower jaw. The fibers run forward and are inserted on the outside of the maxilla below its articulation with the external pterygoid, so when this muscle contracts the maxillary bone is drawn back and the point of the fang moves upward and backward (Plate III, Fig. 1).

The fang proper closely resembles an ordinary hypodermic needle (Plate III, Fig. 2); it consists of a sharply pointed curved The poison canal is situated within tooth. the convex side, gaining entrance by a slitlike opening near the base and has its exit by a narrow slit-like opening near the tip. The probable reason for this is to prevent plugging when the fang is embedded, and so not interfere with the flow of venom. As previously stated, the fang is fixed solidly in the jaw; posteriorly the bone is hollowed to hold the tooth sac. In the alveolar process beneath the mucous membrane lie the reserve fangs, each posterior one being smaller and less developed than the one in front; as many as eight to ten pair of more or less well-developed fangs may exist. When the active fang is normally shed or accidentally lost, its place is taken in the course of a few days by the first reserve. The functional fang at rest is covered by a loosely applied membrane known as the vagina dentis. This is rolled back when the fang is extended.

The venom gland is evolved from the yellow portion of the salivary gland. It is of an almond shape with the point toward the front; is situated below and behind the eye and is connected with the fang by a narrow duct. The duct runs forward; beneath the eye it turns abruptly upward, from which point it follows the posterior wall of the pit and finally passes over the rounded front edge of the maxillary bone, at the base of which it meets but does not

enter the upper opening of the canal of the fang.

The gland proper consists of a cavity into which open the ducts of the true poison-secreting glands; it is surrounded and supported by a double layer of fibrous tissue, which is continued posteriorly as a ligament to be inserted on the articulation of the jaw. A short band of tissue attaches it firmly to the skull, while a third one below is attached to the external pterygoid muscle (Plate IV).

The muscles brought into play in the emptying of the gland are the three temporals. The middle temporal arises from the posterior half of the parietal bone, runs down and forward, to be inserted into the lower jaw; the posterior temporal arises from the quadrate bone and is inserted on the inner side of the entire length of the angular bone of the lower jaw.

The anterior temporal, the true muscle of expulsion, arises from the upper posterior portion of the tendinous capsule of the gland, runs backward under the ribbon-like ligament, winds round the joint, and is inserted broadly upon the lower jaw; so it may be seen that the middle and posterior muscles are principally used to close the mouth, while the function of the anterior is to empty the sac. This makes the emission of the venom a voluntary one on the part of the reptile. Dr. Mitchell, to whose work I have so largely referred in the above description, has proved a further safeguard exists. Anterior to the sudden upward turn he has demonstrated a sphincter muscle surrounding the duct.

At the time of the blow the snake is either symmetrically or partially coiled, the neck and forward portion of the body is thrown into a sigmoid position, the head is elevated and drawn slightly back. At the actual time of striking the mouth is widely opened and the fangs thrust forward, but this motion is so rapid as to be hardly discernible and impossible to describe. As the neck and forward portion of the body alone are used in this motion a snake can never strike a greater distance than one-half its length, and in fact cannot strike accurately

a greater distance than one-quarter, or at most one-third. The quantity of venom ejected varies largely, depending on the size, previous activity. and variety of the snake. It may be said to vary between 2 and 30 minims, though some authorities claim a much larger amount.

Taking this group up as individuals, we will first consider the copperhead, Ancistrodon contortrix, Linn (Plate V). I will describe from a specimen in my own collec-Head scaleation normal; loreal present; upper labials eight, separated from the eye by four rows of suboculars; dorsal scales carinated in 23 rows; subcaudals undivided. Color, grayish-brown with rich chestnut cross-bands of inverted "Y" shape having darker borders, many alternating on the The top of the head is a brighter brown with a distinct coppery tinge, the lips and cheeks are creamy yellow, the line of difference extending from above the nostril and eve to above the angle of the mouth. There are large reddish-brown blotches on the sides and edge of ventrals. dull yellowish; tongue, forks white, base pink; form moderately slender, head distinct. Juvenal markings similar, except tail, the last half of which is greenish-yellow.

Raymond L. Ditmars, whose books I have quoted so freely, suggests that the young copperhead employs its yellow tail to attract frogs, relying on the protective coloration of the body and the similarity of the rapidly wriggled tail to a yellow grub or maggot. This theory seems quite reasonable.

Range—Massachusetts south to Florida line; west to include Texas; in dry, wooded, rocky districts.

The water-moccasin, or cotton-mouth, Ancistrodon piscivorus, Lacépède (Plate VI), is described from a specimen in my own collection. Form stout, head broad and flat on top, no loreal, nasal divided, lower wall of orbit formed by third upper labial, a pair of small plates behind parietals, preoculars two, upper long, extending to postnasal, upper labials large, eight in number, lower ten. Twenty-five rows of heavily carinated scales, subcaudals double in last half. Color, dark greenish-brown with

indistinct darker markings, head black, an indistinct brown streak bo above by yellow from behind the eye angle of the mouth above the labials; and chin yellow, with three dark v bars on the fourth, sixth, and seventh plates; rest of the head dark-brown; of mouth white; abdomen yellow, brownish blotches. The young are re brown, with broad dark bands edge End of tail, greenish-Distribution—same as Elaps fulvius, found in the neighborhood of wat prefers low coastal regions with sh streams.

The rattlesnakes, Sistrurus and Cr can be immediately told by the uniq velopment on the end of the tail, wh only found in reptiles of this group.

The rattle is a series of thin, horny consisting of two or three swellings at constrictions, the free edge being tur to fit loosely into the groove on the ping segment. The function is unkithe following theories have been advaone, not tenable, is that it is a provid arrangement to prevent injury to an and man. Another, to attract birds, sound mimicking that made by certa sects. The most plausible explanat that it is used as a call during the measure.

As a matter of fact, nearly all has snakes rapidly vibrate the tail whe cited; if this occurs among dry leave sound is startlingly like the whir of rattle.

The perfect condition of the rate freshly captured specimens strongly sugthat it is seldom used by the snake inatural state; the number of segments indication of the age of the reptile depend on nutrition and the number of the skin has been shed. Twelve or four rings would represent a rattle of large one in the Academy collection has two four, but on close inspection appears made of two and probably three resnapped one upon the other. It has calculated that the rattle in action is well about 100 times per minute. The total

## PLATE I

Elaps fulvius-Coral snake.



Elaps Euryxanthus-Sonoran coral snake.



Cemophora Coccinea-Scarlet snake.



Ophibolus doliatus, clericus—Southern milk snake.



O. D., Coccineus-Scarlet king snake.



Ophibolus Zonatus-Ringed snake.



Rhinochilus lecontei-Le Conte's snake.



Diagram to show the two poisonous Elaps, A and B, and some of the harmless mimics, C, D, E, F, G.

## PLATE I

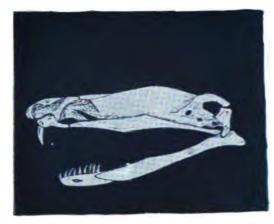


Fig.1

Fig.3

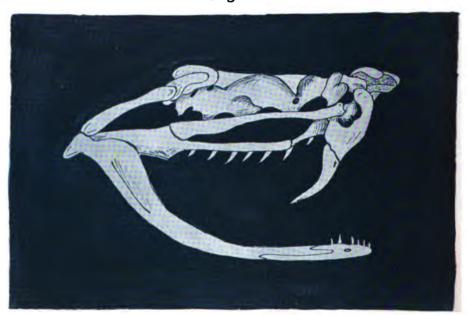


Fig. 2



Fig. 1.—Skull of Elaps fulvius. Showing permanently erect perforated fang, not followed by other teeth in upper jaw. Fig. 2.—Skull of Python variegata, a typical harmless snake. Showing all teeth solid, not grooved or perforated.

Fig. 3.—Skull of rattlesnake. Showing large curved fang immovably fixed in the shortened triangular upper jaw and,

except the reserve fangs (not drawn), not followed by other maxillary teeth.

## PLATE II

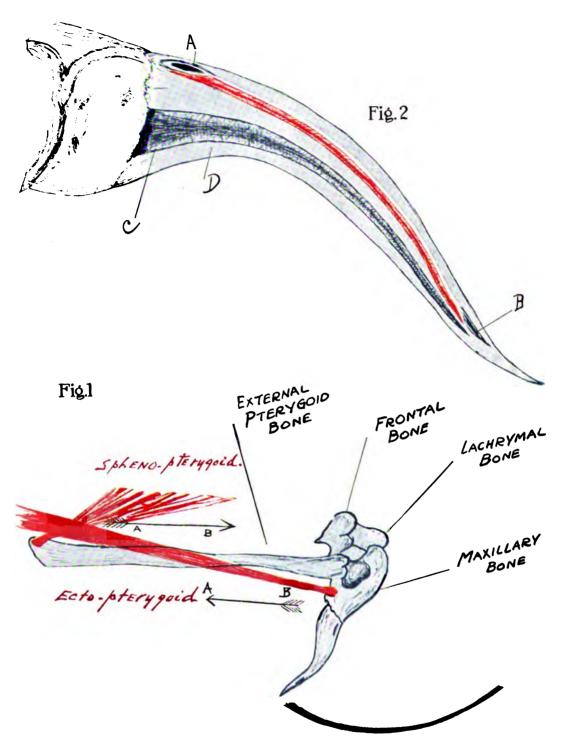
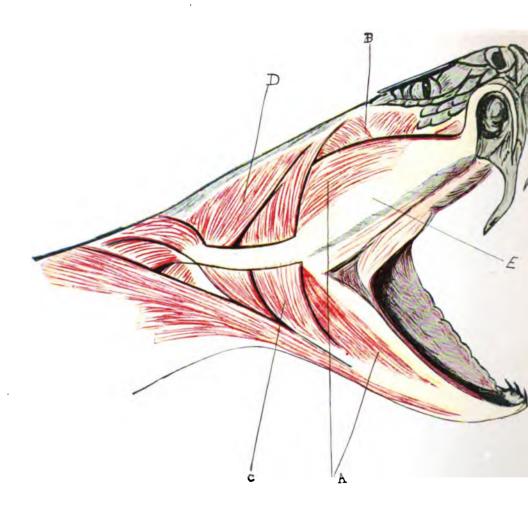


Fig. 1.—Diagram to show the elevation of the fang. When the sphenopterygoid contracts it pulls from A to B, thereby pulling forward the external pterygoid bone, thus pushing the lower end of the maxilla forward, the upper end of the maxilla being held by its articulation with the lachrymal; thereby the point of the fang points outward and upward. The ecto-pterygoid, pulling backward from B to A on the maxilla, folds the fang against the roof of the mouth.

Fig. 2.—Diagram to show poison fang of pit vipers. A, opening for entrance of poison duct; A-B, poison canal; B, exit opening of canal near tip of fang; C, pulp cavity; D, dentine.

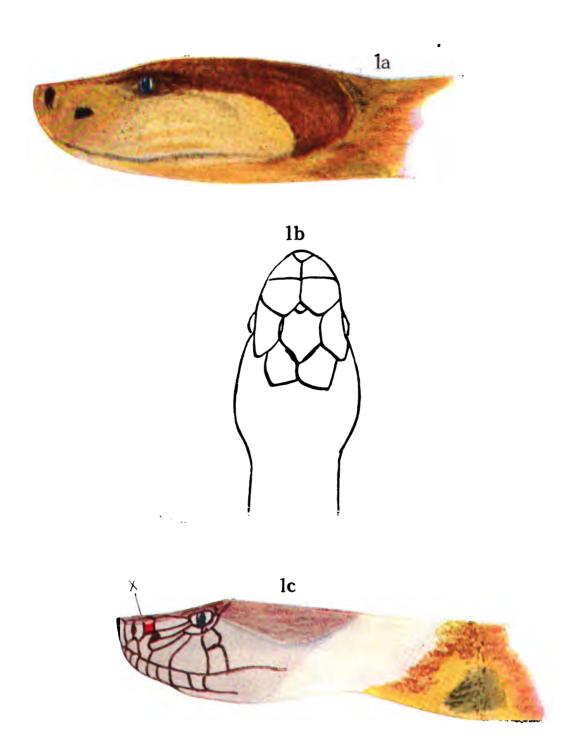
## PLATE IV



A, anterior temporal muscle; B, posterior temporal muscle; C, middle temporal muscle; D, digastricus muscle; venom gland; F, venom duct. Diagram to show muscles: A, anterior temporal, the muscle used in empty the gland; B, C, D, muscles used in opening and shutting the mouth.

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## PLATE V



Copperhead—Ancistrodon contortrix, "Linn." Diagram to show color scheme and head scaleation of the copperhead.

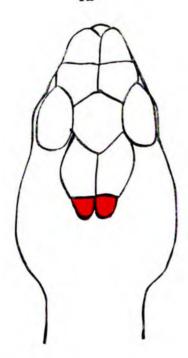
Diagnosis: X, loreal scale, not present in the water-moccasin,

THERAPEUTIC GAZETTE, MAY 15, 1912.

## PLATE VI



1b



1c



Water-moccasin—Ancistrodon piscivorus, "Lacépède." Diagram to show color scheme and head scaleation of the water-moccasin. Diagnosis: 1B, red scales, occipitals; 1C, upper red, preocular, in contact with post-nasal lower red, third labial forming the floor of orbit. Arrangement not found in the copperhead.

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# PLATE VI Fig.1 1b 1c Fig.2 2Ь 2c

Genus Sistrurus, "Garman." Pigmy rattlesnakes. May be distinguished from other rattlesnakes by their smaller size, diminutive rattle, and having the scales on the top of the head arranged like the harmless snakes. Diagram to show color scheme and head scaleation.

to show color scheme and head scaleation.

Fig. 1.—Sistrurus Catenatus, "Rafinesque," Massasauga. Diagnosis: The massasauga. Light line from nostril to angle of mouth. Dark spot covers center of parietal suture. Preocular in contact with postnasal.

Fig. 2.—Sistrurus miliarius, "Linn." Pigmy rattlesnake. Diagnosis: The pigmy rattlesnake. Light line from eye to angle of the mouth. Light band the entire length of parietal suture. Preocular separated from post-nasal by a loreal.

## PLATE W

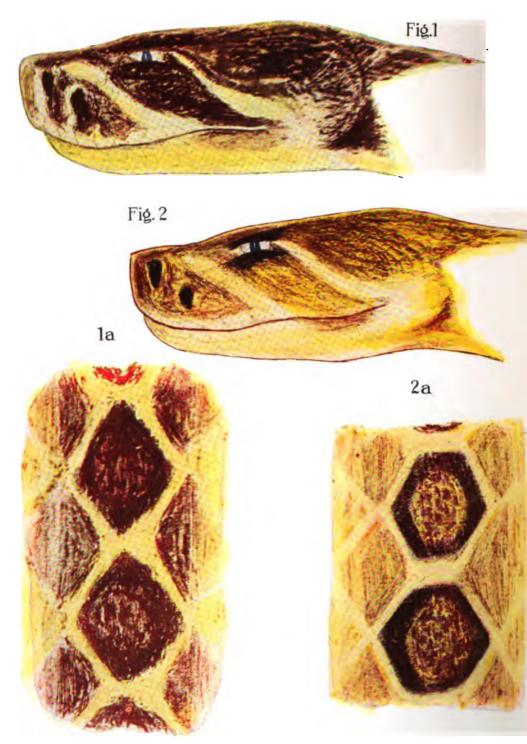


Diagram to show color scheme and markings.

Fig. 1.—Crotalus adamanteus, "Beauvais." The Southern diamondback. Diagnosis: Vertical white line in front of nostril; ground color dark; diamond dorsal marking in contact; two loreal scales.

Fig. 2.—Crotalus atrox, "Baird and Girard." The Western diamondback. Diagnosis: White line absent in front of

nostril; light color; truncated diamonds; one loreal scale.

## PLATE IX



2a

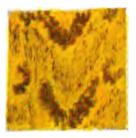


Fig. 2

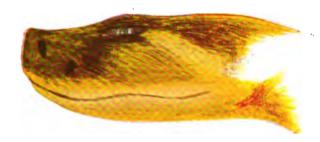


Diagram to show color scheme.

Fig. 1.—Crotalus molossus, "Baird and Girard." Dog-faced or blacktailed rattlesnake. Diagnosis: Muzzle broad, nose scales larger than other species; snout and tail black. Each scale a single color; the corners of most of the dorsal blotches are open and extend to edge of ventrals.

dorsal blotches are open and extend to edge of ventrals.

Fig. 2.—Crotalus horridus, "Linn." Banded or timber rattlesnake. Diagnosis: color, roll sulphur or velvety black; a series of chevron-like dorsal markings. Light line from supraocular to angle of mouth, back of which is a dark spot.

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## PLATE X

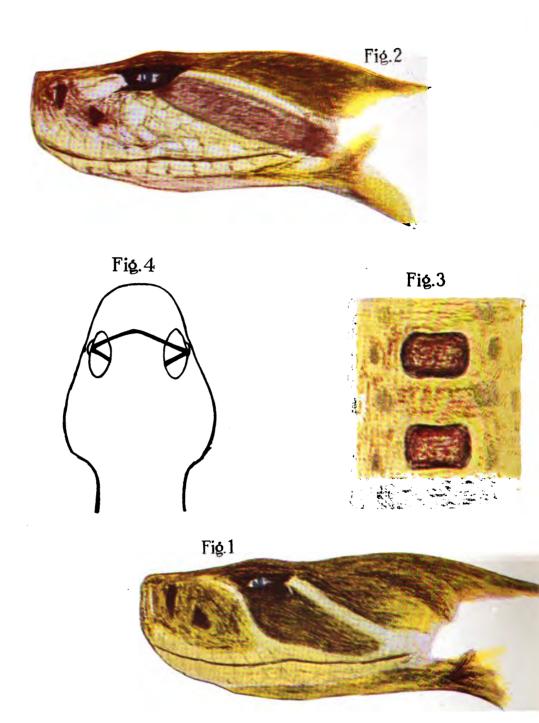


Diagram to show color scheme and head markings.

Fig. 1.—Crotalus confluentus, "Say." Prairie rattlesnake. Diagnosis: A dark oblique band begins at anterior com-

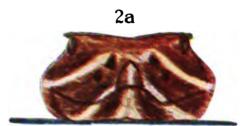
of eye, dipping sharply to angle of mouth.

Fig. 2.—Crotalus Oregonus, "Holbrook." Western rattlesnake. Diagnosis: The dark oblique band begins posterio to center of orbit and runs directly to angle of the mouth.

## PLATE XI







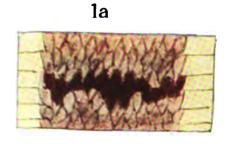


Fig. 1.—Crotalus Lepidus, "Kennicott." Smooth or Green rattlesnake. Diagram to show color scheme and head scaleation. Diagnosis: Color greenish; scales on head large; body scales smoother than other members of this genus; dorsal markings serrated; double or single blotch on nape of neck.

this genus; dorsal markings serrated; double or single blotch on nape of neck.

Fig. 2.—Crotalus Willardii, "Meek." Willard's rattlesnake. Diagram to show color scheme and markings. Diagnosis: Color chocolate-brown. A white median rostral line to lower jaw, expanding between two dark bars.

THERAPEUTIC GAZETTE. MAY 15, 1912.

## PLATE XII



Fig.1

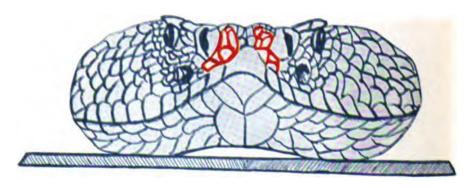


Fig.2

Fig. 1.—Crotalus Cerastes, "Hallowell." Horned rattlesnake or sidewinder. Diagram to show head scaleation. Diagnosis: Supraocular elongated into a horn-like process directed upward and turned slightly inward on itself.

Fig. 2.—Crotalus Mitchellii, "Cope." White rattlesnake. Diagram to show head scaleation. Diagnosis: Color pale. dorsal markings indistinct. Rostral plate separated from anterior nasal by small scales.

THERAPEUTIC GAZETTE, MAY 15, 1912.

of all snakes is a tactile organ, and in no way connected with transference of venom.

Genus Sistrurus, Garman (Plate VII), misnamed the ground rattlesnake, may be distinguished from Crotalus by its smaller size, diminutive rattle, and by the arrangement of the scales on the top of the head like that of the harmless snakes. Two species are recognized:

- 1. Miliarius: Preocular separated from postnasal by a loreal. Light line from eye to angle of the mouth. Light band the entire length of the parietal suture.
- 2. Catenatus: Preocular in contact with postnasal. Light line from nostril to angle of the mouth. Dark spot covers the center of parietal suture.

Sistrurus miliarius, Linn (Plate VII, Fig. 2), the pigmy rattlesnake, I will describe from No. 7217. Academy collection: Ground color ashy, minutely peppered with black, 38 irregular purplish-black dorsal spots narrowly margined with white, the interspaces of ground color narrower than the spots, the blotches posteriorly tending A distinct reddish verto form rings. tebral line from the neck extends backward in the interspaces, but not involving the spots; three lateral rows of subquadrate alternating blotches, the upper row smaller and less distinct than the two lower: ventrals yellow, marbled with black. A narrow light line extends from lowest part of the orbit to angle of mouth; above this a broader brown stripe margined above with light; a faint light mark crosses the forepart of the supraoculars; from this are two parallel wavy dark bands running back to the first dorsal blotch. Loreal present; scales in 23 rows; tail proportionately long, diminutive. Distribution—North rattle Carolina to include Florida, west of Texas. Mississippi Valley to Illinois.

Sistrurus Catenatus, Rafinesque (Plate VII, Fig. 1). The Massasauga is larger and stouter than the pigmy, with a shorter tail and a more fully developed rattle. The usual color is grayish-brown, with from 36 to 45 rich brown dorsal blotches with lighter centers and narrow yellow margins; toward the tail the blotches tend to form

transverse bands. A white line extends from the nostril to the angle of the mouth; a white line crosses the anterior part of the supraoculars. A dark spot covers the parietal suture. Two wavy brown parallel stripes margined with white run back from the supraoculars, to the first dorsal blotch. A broad brown band edged with white extends from the rear margin of the eye Two small yellow spots to the neck. diverge from the pit to the lip. Rest of the head a bright chestnut brown. The abdomen is vellow mottled with black. Lateral blotches like Miliarius; scales in 23 to 27 rows, usually 25, preocular in contact with postnasal.

From the Academy's collection I have noted the following color variations: Nos. 7238-9 are nearly black with obscure markings; No. 7240, ventrals black; No. 7241, color pale gray. No. 7243 has 23 rows, 37 spots, and yellow ventrals, while No. 7244, collected in the same locality, has 27 rows and black ventrals.

Distribution—Western New York to Kansas, north to Canada. Subspecies.

Sistrurus Catenatus, Edwardsii, or Consors (B. & G.). I include the above names purposely, as after examining a large number of specimens and finding the scale rows and number of spots to vary, the former from 23 to 25, the latter from 37 to 50, I do not believe a second subspecies should be recognized.

I have taken No. 12096 as closely approaching the type. Scales in 25 rows, two outer smooth, small lower loreal, preocular in contact with postnasal; color light brown, with 45 dorsal and 8 caudal blotches, the latter subcircular; ventrals 150, subcaudals 27.

Crotalus (Linn): Subcaudals undivided, tail terminating in a rattle. Twelve distinct species are found in the United States.

Crotalus molossus, B. & G. (Plate IX, Fig. 1). Dog-faced or blacktailed rattle-snake. No. 15631, Academy collection: Large size, muzzle broad, rostral small triangular; nose scales larger than other species, number eight, all in contact, four rows between the supraoculars; same num-

ber between suboculars and upper labials; dorsal series in 29 rows. Color dull sulphur, plates of muzzle blackish, tail black; on the back a series of chestnut-brown transverse lozenges 10 to 12 scales wide, 4 to 5 long, embracing on each side of the spine a lighter spot; the bordering scales are of a paler color. The exterior corners of the lozenge are mostly open and extended to the edge of the ventrals. diagnostic character of this species is that each scale is of a uniform color. No. 17897. though otherwise typical, presents but 25 rows of body scales, while No. 16530 has scales in 27 rows. Habitat-Arizona, New Mexico, southward.

Crotalus adamanteus, Beauvois (Plate VIII, Fig. 1). The diamondback is the largest North American poisonous snake, and grows to a length of eight feet. A specimen in my collection has the following characters: Color grav-brown, tinged with yellow, a series of diamondshaped dorsal spots of black enclosing ground color, the black edged with pale vellow borders of one scale width: these cross on the fifth or sixth lateral row to extend to the ventrals, the extended lines enclosing a dark mottled area. The dorsal markings are in contact on the body, toward the tail, which is olive, ringed with black; they tend to become cross-bands. abdomen is yellow; rattle nine segments and a button. A light line runs from the posterior end of the supraoculars to the row of scales above the mouth; a second line from behind the nostril to and including 7, 8, 9 upper labials. There is also a distinct white line in front of the nostril. and two short bars from the pit to and including the labials. Head broad, triangular, rostral high; two small loreals separate two long preoculars from postnasal; supraoculars large, extending well over the eye, eight scales between, four between the suboculars and upper labials. Rest of head covered with small carinated scales; body scales in 27 rows. Habitat—North Carolina southwest to Louisiana; most abundant in low coastal region.

Crotalus atrox, B. & G. (Plate VIII, Fig.

The Western diamondback is of 2). smaller size but closely resembles Adamanteus. It has the following points of differ-One loreal, ground color lighter absence of vertical line in front of nostril The diamond markings are truncated. The tail is light, strongly marked with black half-rings. No. 15165, Academy collection has six rows between supraoculars, four between suboculars and labials. Scales in 25 rows; ventrals 178; subcaudals 23. Distribution-Northern Mexico. Central Texas, to Arizona.

Crotalus atrox ruber, Cope. This subspecies is smaller than Atrox, rostral wider than high; eight rows between supraoculars, five between suboculars and labials. Scales in 27 rows; color, light red or reddish-brown, marked with deep red spots; oval in front, diamond-shaped posteriorly. lateral, borders indistinct, separated in the middle line by a single row of yellow-tipped scales. Indefinite red spots in the lateral angles, head without markings except faint line from eye to mouth; tail white, with five black cross-bands.

Crotalus horridus, Linn (Plate IX, Fig. The timber or banded rattlesnake. This is the common rattlesnake of the eastern temperate United States. It grows to an extreme length of five feet. following is a brief description of a specimen in my own collection: Color, roll sulphur, a light yellow line from supraocular to angle of the mouth, back of which is a dark blotch. There is a series of chevron-like saddles on the back three to four scales wide, irregularly bordered with light vellow of one scale width, separated by three to five scales of ground color. Some of the bands are broken and form irregular blotches. The tail is black; the ends of the ventrals between the bands are strongly peppered with black; rattle, seven segments and a button. The marked features of the head are two large internasals followed by a row of five scales, the two external of which are much the larger; the supraoculars are large and ovoid. The rest of the head is covered by small granular scales. Body scales in 27 rows, markedly keeled, except outer two rows, which are only faintly. A jet-black phase occurs. They are usually but not necessarily males. Distribution—Maine to, but not including, Florida.

Crotalus confluentus, Say (Plate X, Fig. The prairie rattlesnake is the common rattlesnake of the Central United States, extending from Canada to Mexico. 7069, Academy collection, presents the following characters: Rostral high, in contact with prenasal; small plates behind nasals; three rows between supraoculars, four between suboculars and lips; top of muzzle covered with small scales, 27 rows of body scales; ventrals 182, subcaudals 23; color vellow: dorsal spots brown; concave before and behind; corners rounded slightly, convex on the sides; ten scales wide, four or five long, formation posteriorly tending to rings. These blotches are lighter in the center and are edged with light yellow. Two series of small alternating blotches on the sides, ventrals yellow; a brown oblique band beginning at the anterior corner of the eye, bordered by narrow white, extends to the angle of the jaw; a small vertical line below the pit and a faint one on the outer edge of the rostral. The supraoculars are crossed in the center by a white line which bifurcates internally the anterior arm, crossing to join the fellow of the opposite side

No. 10745 from Lake Valley, New Mexico, the C. c. pulverulentus, type of Cope, has six rows between the supraoculars, with a rather enlarged scale on its posterior inner border, and two symmetrically placed larger scales over the occiput; the color is lighter and more ashy than usually found; these slight differences are its claims for recognition.

Crotalus oregonus, Holbrook (Plate X, Fig. 2), Western rattlesnake, is identical with Crotalus lucifer of Baird & Girard. No. 7158, Holbrook's type, is so shriveled by alcohol as to be useless for description, so I have taken No. 16986, collected from the same locality. Color and spots like Confluentus, head scales slightly smaller, six rows between supraoculars, three between

suboculars and upper labials. Scales in 25 rows; ventrals 170; subcaudals 21. The dark streak bordered by broad white on the side of head begins posterior to the center of the orbit and runs directly to the angle of the mouth, not dipping sharply downward as in Confluentus. The transverse supraocular line is distinct. Habitat—Pacific Coast region, California to British Columbia.

Crotalus lepidus, Kennicott (Plate XI, Fig. 1), smooth or green rattlesnake, is one of the smallest of the genus. The characters of No. 17921 are as follows: Color (blue-gray in alcohol), rich dark-green in life, crossed by 17 black bands extending just short of the ventrals; bands 2½ scales wide on dorsum, tapering gradually down the side; the bordering scales are half black and pale green, which gives the edge a serrated outline. Many of the body scales have black tips; the head is without marks. There is a double heart-shaped black blotch with light color between, on neck behind occiput. Tail brown. Rostral low, two preoculars, two loreals; two scales between suboculars and upper labials, ten between Body scales in 23 rows, supraoculars. external two smooth, all less carinated than usual. Ventrals 163, subcaudals 27; rattle, three joints and a button. Head more oval in shape and less distinct than other crotalus. No. 17903 has single crescent on nape of neck. Distribution-Neighborhood of Mexican boundary.

Crotalus cerastus, Hallowell (Plate XII. Fig. 1), the horned rattlesnake or sidewinder. No. 7097, small slender body, head distinct, rostral wide as high, head scales small, five rows between supraoculars, two between suboculars and labials. entire: the supraocular is elongated into a horn-like process directed upward and turned slightly inward on itself; body scales in 21 rows strongly and thickly keeled except outer two rows. Ventral, 145; subcaudals, 20; color, pale yellow, with an indistinct series of pale-brown dorsal blotches, and several rows of indefinite lateral spots. Habitat-Desert regions of When hurried, its mode of southwest.

progression is peculiar, moving away sideways, in this respect resembling several desert species of Old World vipers.

The following species I have not had the opportunity to examine, so will give only a condensed description of each from the type report:

Crotalus mitchellii, Cope (Plate XII, Fig. 2), commonly called white rattlesnake, from its pale coloration and indistinct dorsal markings. The rostral plate is separated from the anterior nasal by small scales, a condition not existing in any other member of the group. Distribution—Arizona and South California.

Crotalus pricei, Van Denburgh, described from specimens in the Leland Stanford University. Body scales in 21 rows, rostral higher than wide, enlarged plates on muzzle, one to three rows between supraoculars, one row between subocular and labial; color olive gray, thickly covered with small brown spots; small brown blotches in two series on the back, alternating anteriorly, forming cross-bands posteriorly; laterally two or three small alternating rows; ventrals slate-colored, with whitish ends; outer row of scales white; a dark-brown oblique streak behind the eye; two small brown spots on occiput. Distribution—Arizona to Mexico.

Crotalus tigris, Kennicott. Nose blunt, head oval, size small, rostral triangular, postnasal and preorbital short, one or two loreals, two or three scales below orbit, top of muzzle and interorbital space filled with small flat equal sized scales. Supraocular plate divided by a transverse groove, a branch from which more or less completely cuts off a part of the margin. Scales on cheek and back of head keeled. Color gray, with small dorsal blotches and an indistinct lateral series. On the posterior two-thirds of the body the spots form cross-bands. A dark oblique streak behind the eye; ventrals yellow. Habitat-Arizona, South Nevada, and South California.

Crotalus willardii, Meek (Plate XI, Fig. 2). Head long, muzzle narrow, somewhat recurved. Rostral higher than wide, nasal in contact with rostral, upper preocular not

divided, internasal as long as wide; seve or eight scale rows between supraocular two between the eve and lip. Upper labia 14-13, lower 13-15. Body scales 25 row keeled, except outer two smooth; ventra 153, anal single, subcaudals 28. Colo chocolate, dorsal markings, short, dar cross-bands, shading into a black lin anteriorly or posteriorly, bars sometimes i pairs, and then separated by one or tw scales; tail brown, with three distinct hal rings, brown spots laterally of one to fou scales; whole body more or less speckled Ventrals white anteriorly, posteriorly small spots or blotches. A white median rostra line to lower jaw, expanding between two wide dark bars which extend half-way back on jaw; a white line borders second to fifth labials inclusive, continuing on to lower jaw. A light band extends obliquely from postnasals under eye to cover las four labials; below this across the pit a dark band spreading out on fourth or sixth lower A prominent dark postocular streak about three scales wide, not bordered by white above.

The above is by Frank A. Hartman, U. S Nat. Museum report.

#### THE VENOM.

The first recorded reports on this subject were made over 200 years ago by a Charras and a Redi on the common viper of Europe and its poison. This was followed later by the able work of the Italian Felix Fontana, but as organic chemistry was in its infancy little could be accomplished.

Prince Lucien Bonaparte in 1843 first attempted a chemical analysis of viper poison, and stated it to be albuminoid or proteid in character. About twenty years later Dr. S. Weir Mitchell of Philadelphia, in a series of analyses of rattlesnake poison, confirmed Bonaparte's theory and called the substance crotaline, since which time all experiments made have proved the correctness of Dr. Mitchell's views.

The next important step was taken by Dr. Mitchell and E. T. Reichert in 1883, when they made a preliminary report, the final result of their experiments being pub-

lished by the Smithsonian Institute in 1886 under the title "Researches upon the Venoms of the Poisonous Serpents."

These investigations demonstrated the fact that crotalus and cobra poison was a complex substance consisting of several proteids, the two chief ones being named globulin and venom peptone.

At about the same time Dr. R. Norris Wolfenden, of England, was conducting a similar series of experiments on the venom of Indian cobra (Naja tripudians) and the Indian viper (Daboia russelli). His results confirmed the discoveries of Mitchell and Reichert. This substance he called syntonin, which is the same as Mitchell's venom peptone. Later studies by Dr. C. J. Martin and J. McGarvie Smith, of Sydney, Australia, on the Australian blacksnake (Pseudechis porphyriacus) proved this poison to contain three proteids, one a nonvirulent albumin, and two poisonous albumoses.

In 1888 a Russian, Dr. E. A. Feoktistow, made a communication on the poison of several varieties of vipers and the Crotalus durissus, and its action on the nervous system, blood, and vessels. The same year a Frenchman, M. Kaufmann, reported on the Vipera aspis (the common viper of France), its poison, and the action on the nerves, circulation, and tissues, and the discovery of chemical antidotes to act locally on the poison. Both these investigations confirmed Mitchell's observations as to the difference between rapid and slow poisoning—i.e., if injected directly into a vein there is rapid nervous, circulatory, respiratory, and digestive excitation, followed by drowsiness and death, the mental faculties being the last to be impaired; while hypodermic injection produces the same systemic effects, plus a local lesion, consisting of more or less swelling with marked discoloration due to extravasated blood and serum, death following promptly on the absorption of the poison. Mitchell and Reichert had found potassium permanganate, ferric chloride, iodine, and bromine were destructive locally to the poison, while Kaufmann advised chromic acid 1:100 solution as the best local treatment. Dr. Calmette first suggested chloride of gold to be used locally, but later indorsed chloride of lime solution 1:11. Dr. C. H. Yarrow favored pilocarpine and jaborine. So many drugs had their advocates.

In the Proceedings of the Royal Society for 1894, Sir J. Lauder Brunton, with Sir Joseph Fayer and Dr. Leonard Rodgers, reports a series of experiments (renewed after a lapse of thirty years), proving that the venom of the Indian cobra and Russell's viper is neutralized by potassium permanganate; also describing a lancet devised by Sir J. Lauder Brunton for use in the Indian army, consisting of a half-inch blade with a hollow screw-top handle to hold the crystals of the drug. Directions: Incise deeply the bite and rub in thoroughly the pure crystals.

Feoktistow and Müller had demonstrated that the poison was in part eliminated by the kidneys, while Dr. Konrad Alt showed there was slight elimination by the stomach. Meanwhile internal treatment had not made much progress. Ammonia had been proven valueless; alcohol dangerous, unless carefully and moderately given.

In 1871 Dr. Lanszweert, of San Francisco, Cal., reported five cases successfully treated with arsenate of strychnine. This method was then forgotten until 1888, when Dr. A. Mueller, of Yackandandah, Victoria, formulated and proved the success of the strychnine treatment in a large series of cases of poisoning by Australian snakes.

Preventive inoculation was first demonstrated in 1887 by Prof. Henry Sewall, of the University of Michigan. He reported a series of experiments on pigeons with the poison of the massasauga (Sistrurus catenatus), the conclusion being: "Repeated inoculations with a non-fatal dose produced increased resistance, without affecting the health of the animal."

It is well known that all poisonous snakes are immune to their own venom, as are also many harmless snakes poison-proof: for example, the common king snake, a member of the Ophibolus group, is immune to the poison of the rattlesnake. It has been shown that the blood of harmless immune

snakes, when injected into animals, produces all the symptoms of poisoning. Further investigation has proved this to be due to an internal secretion of the salivary gland of the harmless immune species. These experiments opened the way to producing immunity by giving attenuated doses of venom.

Dr. Calmette was the first to produce an anti-serum to protect against snake poison. He began by injecting rabbits with onetwentieth the fatal dose, gradually increasing the amount until he was able to give 80 times the fatal dose without reaction. Five drops of the serum of the immunized animals neutralized one milligramme of cobra This serum will protect against the 'neurotoxic and hemolytic properties of other venoms, but not against the hemorrhagin of the rattlesnake. An antiserum for rattlesnake poison can be prepared by immunizing goats with attenuated rattlesnake poison. This serum will protect against hemorrhagin, but is valueless against the poison of the cobra.

The more recent work is that of Keyes and Sachs and Flexner and Noguchi. They have shown that the venom of different species varies greatly in its toxic properties, due to the relative amount of the different constituents. The formula of venom is as follows:

Neurotoxin.
Hemotoxin  $\left\{ egin{array}{ll} Agglutinin. \\ Hemotoxin \\ Hemorrhagin. \end{array} \right.$ 

Cobra venom has neurotoxin in excess, with less hemotoxin, while the poison of the rattlesnake is chiefly hemorrhagin, with less neurotoxin and hemotoxin. The copperhead and moccasin are intermediate, the poison containing both hemorrhagin, hemotoxin, and neurotoxin in considerable quantities.

The action of the venom is briefly thus: Neurotoxin acts on the cells of the central nervous system, causing death by paralysis of the cardiac and respiratory centers. The hemotoxins, agglutinin and hemolypsin, destroy the blood cells. Hemorrhagin acts directly on the endothelial lining of t blood-vessels and causes its destruction.

The latest comprehensive work on t subject is by Noguchi, issued by the Ca negie Institute in 1909, to which I won refer all interested in this topic.

#### TREATMENT.

We will only consider this subject as applies to bites received in the Unit States:

- 1. Do not lose your head. Death fro snake bite is extremely rare in this country so much so that if a man is bitten in Tex it will form a heading in the Philadelph Remember that most so-calle poisonous snakes are harmless, also that the poisonous varieties are now usually four far remote from civilization in thick wooded, barren, rocky desert, or in the lov lving coastal regions of the South. Mo than two punctures at the seat of injur would be a strong indication that the wour was innocent. Always, if possible, kee the head of the snake for identification, ar so save future worry.
- 2. If, as is generally the case, the bite on an extremity, tie one or more ligature preferably a broad rubber band, above the injury to prevent the poison gaining entrance to the general circulation.
- 3. Incise deeply the wound, cutting across the puncture for at least one inch, and we beyond the depth made by the fang. Now wash in running water, manipulating the part to promote free bleeding.

If running water is not available, suck the wound, as there is no danger in taking the poison into the mouth unless some break in the mucous membrane exists. The mout should be thoroughly rinsed with potassium permanganate solution.

- 4. Now wash well the wound and use if and around the potassium permanganate, of inject a chromic acid solution 1:100, being careful to completely infiltrate not only the wound but also the surrounding tissues.
- 5. Do not give ammonia. Stimulate wit small doses of whisky, if indicated, but do not overdose, as more persons have been killed by giving large quantities of whisk than by snake bite.

- 6. Rush the case to a good surgeon.
- 7. When positively certain that the poison has been removed from the wound, loosen cautiously the ligatures, the one nearest the heart first, but do not remove, so they may be again tightened if symptoms recur. In all cases the victim should have the best surgical care, and the wound kept open by

packing with wet antiseptic gauze, as sepsis and local gangrene is very apt to follow the injury.

This article was not written for the specialist, but to help the medical layman in the identification of dangerous snakes, so I have purposely in my drawings from nature made them semidiagrammatic.

#### SCARLET RED FOR GRANULATION. 1

BY DR. S. B. KOSITCHEK,
Assistant of Dr. Carl Brek, of North Chicago Hospital Clinic.

Shortly after Schmieden had made the report of this work with scarlet red, it was taken up in the clinic of Dr. C. Beck, at the North Chicago Hospital, in order to ascertain if similar results could be obtained.

Dusting powders, salves, cautery, in fact all known means of promoting fresh granulations, and the production of epidermatization had been tried, some with good, others with little, and still others with no benefits.

Before making any trials with scarlet red on our patients, an attempt was made experimentally to prove that it causes a proliferation of epithelial cells.

This was done by taking 1 part scarlet red powder to 3 parts of olive oil, and injecting this solution hypodermically into the ear of a rabbit (Dr. Moore and Newmann). About one week after injection a tumor was seen on the ear of the rabbit, about the size of a pea. (This can be seen in the accompanying photograph.) Three weeks after injection this growth was removed, and upon sectioning it, was found to be made up of epithelial cells.

Among the first cases upon whom we tried the scarlet red were the following:

Case 1.—H. G., aged eight; nationality, Russian. Was brought to the North Chicago Hospital suffering from a severe tertiary burn, involving the left side of the neck, chest, axilla, and under surface of arm. So severe was the condition of the child that for several weeks his life hung in the balance.

The first dressing applied was the scarlet

red salve made up with vaselin and scarlet red 5 per cent, and applied thickly over the burn; this was covered over with gauze and cotton. So healthy did this keep the granulations, and so rapid was the epidermatization along the borders, that no other local treatment was given, so that when the time came to place our skin grafts the surface to



be covered was about one-half the original size. Most of the grafts did not "take," so the scarlet red salve application was continued. At the present time the whole surface is healed over.

Since the treatment of this case with the scarlet red we have treated other cases of burns in a similar manner, with similar success.

<sup>&</sup>lt;sup>1</sup>Read before the German Medical Society, Chicago, Ill., May 4, 1911.

Case 2.—This demonstrates the value of the scarlet red in postoperative treatment of cases in which the old methods were tried without benefit. Mr. J. F., operated upon by Dr. C. Beck, for the removal of a malignant growth in the axilla which had spread to such an extent that it was only by the most radical operation (removal of arm and entire shoulder girdle) that healthy tissues could be reached.

The nutrition of the large semicircular flap was not good, a large portion of its edge sloughing off, leaving a surface about four inches wide uncovered. Adhesive strip and secondary sutures failed to draw the flap and skin of the chest wall close enough to allow union to take place, so these attempts were given up and scarlet red used to freshen the granulations and promote the healing by secondary intention. In a remarkably short time this patient was presented before a well-known medical society, with wound entirely healed.

Case 3.—Thigh amputation, with gangrene and sloughing of flaps, entirely healed through the use of the scarlet red salve as a dressing.

These cases serve to illustrate the type of patients upon whom we have used the salve.

Recently we have been using a 5-per-cent ointment of scarlet red as furnished by the Department of Experimental Medicine of Parke, Davis & Co., and with the same results as above noted.

Through the results in these and other cases scarlet red has earned a permanent place in the dressing basket at the North Chicago Hospital.

#### ENURESIS AND THYROID EXTRACT.

In the Lancet of December 9, 1911, FIRTH in discussing this subject says that the cases which appear to react to this form of treatment better than all others are those in which the enuresis has persisted since birth, and in which the patients are also backward. He had five of these cases, all of which showed marked improvement. Seven cases with enuresis from birth were stated to be quite satisfactory as to the

mental condition, and only one of these in proved. Of the sixteen cases in which enuresis started during childhood, six of of the ten improved were backward copared with two out of six not improve The duration of the acquired enuresis we of no importance in prognosis.

In seven cases in one group hypertrop of tonsils and adenoids was present, a four had undergone operation for this co In another group four childs were similarly affected, and one child I had them removed. In no case could a connection be traced between operation a enuresis. In no case could the enuresis ascribed to the genitalia, whilst threadwor had been noticed in three cases of the improving and in two cases amongst the who received no benefit by treatment. three cases the enuresis could be traced to definite exciting cause—an operation f hernia, scarlet fever, and enteric fever spectively. The first of the cases was cure but the other two did not respond real well to the treatment.

An attempt was made to obtain data f controlling the effects of the thyroid e tract from observations on the pulse, ter perature, and weight. The pulse-rate d not give any definite evidence of overdo until diarrhea commenced, and showed wi variations in uncomplicated cases. Had t children been under observation in hospit where the pulse could have been record twice daily, thyroidism would probab have been detected by the increased puls rate before the onset of diarrhea made obvious, but a weekly attendance and the likelihood that the accompanying exciteme will disturb the pulse-rate seem to rend the pulse an untrustworthy guide, and explain the difference noticed for which a definite cause could be otherwise assigne

The temperatures were taken in the rectum and varied between 98° and 100° leads to before treatment commenced; all cases except five showed an average rise of about 1° while under treatment, but there was redistinctive feature about the behavior of the temperature in any group.

#### EDITORIAL.

## INTRAVENOUS INJECTIONS TO BE USED WITH CARE.

It is now many years since we first called attention to the value of intravenous injections of normal saline solution for the purpose of combating certain conditions which are commonly met with by physicians and surgeons. Three or four years ago we also called attention to the necessity of exercising care as to the exact saline content of the liquid injected, and quoted Matthews's investigations, which served to emphasize this point. Twenty-six years ago a series of investigations were carried out in Ludwig's laboratory at Leipzig which had a direct bearing upon this same subject.

There can be no doubt whatever that the importance of this matter is not as fully recognized as it should be. Not infrequently the preparation of the saline solution is left entirely to a comparatively untrained nurse, and the working formula which is given her is by no means an accurate one. Indeed, it is a common practice, we believe, to direct that a teaspoonful of common salt should be added to a pint of water-a teaspoonful being a very uncertain quantity and the salt being rarely, if ever, sterilized before it is dissolved. We have repeatedly called attention to the advisability of employing Locke's modification Ringer's solution for this purpose. There is no justification in the employment of the rough-and-ready salt solution to which we have already referred, since Locke's modification of Ringer's fluid can now be obtained in the form of "concentrated sterile saline." or in the form of sterile salts, which when added to a liter of water provides not only a salt solution of 0.9 per cent, but also gives the physician a solution in which the normal saline ingredients of the blood are present in the proper proportions.

Our attention has been called to this important matter not only by clinical experience, but by two papers which have appeared, practically simultaneously, in this

country and abroad. In the British Medical Journal of December 16, 1911, Hort and Penfold give us the results which they have obtained from a research carried out in the Lister Institute. Although their investigations were chiefly made upon animals, many of their points have a direct bearing upon the use of saline solutions in human beings, and much literature is quoted concerning this important matter.

It is well known to physiologists that when a saline solution which is less than 0.9 per cent is injected into the body of a human being, its hypotonic properties cause the osmosis of the salts of the body until the fluid injected is isotonic with the tissues; and, on the other hand, if a solution greater than 0.9 per cent is injected, this solution abstracts fluids from the tissues until the two liquids are isotonic. Any considerable variation in the tonicity of the fluid is capable of producing very serious functional and organic changes in different organs of the body.

Hort and Penfold call attention to the fact that fever, rigors, subnormal temperature, intestinal hemorrhage, Cheyne-Stokes breathing, convulsions, and even sudden death have followed intravenous injections. although the last two accidents have only ensued when solutions which were strongly hypertonic were used. These symptoms can readily be produced in animals by the use of such solutions. These writers also quote Fischer and Bingel as having recorded the onset of glycosuria after intravenous saline injection, and Raum found that normal saline caused vacuolation of the liver Allbrecht found that the red cells of cells. animals were damaged by large injections of normal saline, and Rössle noted degenerative changes in the heart muscle and capillary walls of animals so injected. Hössli also found fatty changes in the heart-muscle and kidneys following saline infusion.

The investigations of Hort and Penfold would seem to indicate that the fever is not

so much due to the injection of a saline solution which is of an improper strength as it is due to the presence of microörganisms in the distilled water which is supposed to be sterile, and they call attention to a paper of Wechselmann, who noted that, when saline solutions were given intravenously for the purpose of administering salvarsan, the symptoms which sometimes followed were apparently due to such infection rather than to the drug, the salt, or the Thus, he found that the water employed gave a luxuriant growth of a Gram-staining, spore-bearing bacillus, although it was supposed to be sterile distilled water. Hort and Penfold reach conclusions which are practically identical. They even found a far larger number of microörganisms in the water than did Wechselmann. The necessity of seeing to it, therefore, that the water is sterilized immediately before it is used, even if it be distilled water which has been kept with ordinary precautions, is In some instances, too, it would manifest. seem probable that when the water is boiled and fever follows its injection, this symptom results not from the presence of living microörganisms but from soluble products directly or indirectly due to the previous existence of bacteria.

The second paper which has attracted our attention to this matter is contributed by Evans to the Journal of the American Medical Association of December 30, 1911. and is more clinical in its nature. As Evans well points out, very large quantities of fluid cannot be injected, even if their concentration be normal, without throwing a very heavy burden upon the kidneys and perhaps also upon the heart; although we cannot help feeling that before the heart is materially damaged by such injections the quantity must be enormous. Evans records two cases in which the abuse of saline solutions, either by the rectum or subcutaneously, resulted in alarming symptoms in one instance and death in another.

The lesson to be learned from these papers and from clinical experience is the old one that any remedial measure capable of doing good is, if abused, capable of harm. Saline injections, properly prepared, of proper strength, and sterile, can be used within certain limits with great advantage and are often life-saving agents. Rogers has proved in cholera that hypertonic solutions are advantageous because in this disease anything which will diminish the amount of fluid which is poured out from the body, theoretically and practically, is advantageous. Care should be taken always, except in cholera, that, for use in human beings, the saline solution is neither weaker nor stronger than 0.9 per cent.

#### ENLARGED GLANDS OF THE NECK

Some months ago we considered in the editorial columns of the GAZETTE the treatment of enlarged glands of the neck, the most important point made being that many of these enlargements should be treated surgically, and, furthermore, that the rapid disappearance of markedly enlarged glands was probably indicative of their having undergone suppuration and rupture into the surrounding tissues rather than that skilfu. treatment had resulted in their being dispersed. In other words, just as sudden relief from pain in appendicitis is indicative. in most instances, of increased gravity rather than recovery, so does the sudden appearance of a fluctuating mass in the neck indicate immediate interference, although on examination by the eye the mass seems to some extent, at least, to have returned to its normal size.

Our attention has been called to this matter once again by an interesting contribution of Dr. Hale-White to the Clinical Journal of January 3, 1912, in which he discusses not only the treatment of enlarged cervical glands or lymph nodes, but also mentions a number of interesting etiological and diagnostic points which have considerable bearing upon the management of this condition. Thus, he points out that occasionally in children and adults there is enlargement of the glands at the back of the neck because of the presence of pediculi in

the hair. This enlargement is not only sufficient to be felt, but to be actually seen. Of course, the therapeutics of such a case is connected with the destruction of the parasite and not with local treatment of the glands or internal medication. So. too, it not infrequently happens that the glands under the jaw are enlarged when the patient is suffering from disease of the teeth, and sore throat in its various forms, diphtheria, and septic conditions of the mouth may all produce great enlargement of the glands in this neighborhood, one of the most frequent causes being an infectious tonsillitis. always wise in making a diagnosis of the cause of enlarged glands to follow the tributary lymphatics to their peripheral endings, and to seek at these endings for some local cause. Thus, Hale-White cites an instance in which a woman suffering from unilateral enlargement of the axillary glands, for which no cause was manifest. was found to have been leeched on the chest, that the leech bites had become inflamed and the glands secondarily enlarged.

So far as the more grave causes of glandular enlargement are concerned we may cite malignant disease and tuberculosis. although malignant disease rarely affects the cervical lymph nodes until late in the malady, unless we include Hodgkin's disease in the list of malignant neoplasms. When malignant disease affects tissues about the mouth or tonsils, secondary enlargement of the cervical glands may speedily develop. It is interesting to note, too, that not infrequently in malignant disease of the abdominal viscera there is found an enlarged gland just above the left clavicle; this enlargement ensuing because the thoracic duct carries the disease upward. If there are enlarged glands above the clavicle, this gland is probably due to the same cause, but if found alone it should attract attention to disease below the diaphragm. If there is reason to believe that the enlarged glands are tubercular in nature, it is probably best, in the vast majority of instances, that they be carefully dissected out. the greatest possible precaution being taken

that little damage is done to surrounding parts and that no blood-vessels are incised until they have been carefully tied.

Concerning the use of tuberculin as a curative agent for tuberculosis of the cervical lymph glands, we notice with interest Hale-White's statement to the effect that tuberculin is not a reliable agent for this purpose, even if tubercle bacilli have been actually found in an excised gland. Where there is reason to believe that the enlargement of the glands is due to disease of the tonsils, it is practically useless to remove these bodies by means of the guillotine. since the remaining portion of the gland is also infected and the source of disease is only partly removed, while, at the same time, numerous avenues for the entrance of further infection are opened.

Concerning the value of the von Pirquet. or other tuberculin, tests to determine if the enlarged glands are tuberculous in nature, we can only conclude that even if the reaction is positive, this proves but little. as tuberculosis in other portions of the body. or an old, healed, tuberculous lesion, may give the reaction and lead to the erroneous deduction that the focus of tuberculous infection is in the neck. Hale-White quotes 130 cases of enlarged glands in which the tonsils were dissected out, and no tuberculin was used, of which 101 were cured, and 51 consecutive cases in which tuberculin was given in addition to tonsillar dissection, of which 32 were cured. Although these statistics are limited as to numbers, they certainly indicate, as far as they go, that the tuberculin was not advantageous.

Tuberculous glands, while usually slow in development, occasionally are very acute in the onset of their swelling, and the physician must not rely upon an acute onset as indicative of an origin far removed from tuberculosis. If there has been a general tuberculous infection, there may be many lymph nodes in other portions of the body distinctly enlarged. In this connection, too, the glandular fever of childhood is not to be forgotten, nor is lymphatic leukemia or Hodgkin's disease to be ignored in making

the diagnosis, but in lymphatic leukemia the enormous increase of lymphocytes in the blood makes a diagnosis clear. In all these conditions a very distinct and sometimes a sharp febrile movement may be present.

There is little use in operating upon glands which are enlarged as the result of lymphatic leukemia or Hodgkin's disease. Indeed, operative interference may be distinctly harmful, and unfortunately there is no medical treatment which is curative in either malady.

When glands are enlarged as the result of various forms of infection, the use of iron, quinine, fresh air, and sunshine is without doubt useful, and vaccine therapy is not to be forgotten. The iodide of iron seems to be the remedy among the iron preparations which is calculated to give the best results.

#### THE TREATMENT OF EMPYEMA.

Although croupous pneumonia in children is, when free from complications, very rarely fatal in distinction from catarrhal pneumonia, which, in this class of patients, has a high mortality, yet it not infrequently results in the death of the patient by reason of some sequel to the primary illness, of which the most common is empyema. This sequel is also by no means rarely met with in adults, and empyema not only occurs as a result of infection by the pneumococcus, but because of the presence of a number of other organisms which are pyogenic in character.

The question as to the method of treatment which should be instituted depends, in some degree, upon the pus-producing organism which is responsible for the condition. In all cases it goes without saying that the old-time rule, "wherever there is pus let it out," holds true. In children suffering from pneumococcic empyema which has not been of very long duration, an intercostal incision is, in our experience, usually sufficient not only to cause exit of the pus, but also, if drainage is maintained, to result in recovery, although we are well aware of the fact that

the majority of surgeons believe that in practically every case of empyema, whether it be in the child or in the adult, it is wise to resect the rib. It is quite true that the operation of resection of a rib is, as a rule, by no means difficult; but it is exceedingly painful to the patient, so that it often, if not always, requires the administration of an anesthetic, which may be distinctly advantageous in view of the high intrathoracic pressure produced by the effusion and the displacement of the heart which is usually present.

Much depends, of course, upon the changes which have taken place in the chest wall. When, by reason of a pleuritis which has been present for a long time, the edges of the ribs are brought in close approximation, or even overlap one another, it is manifest that an incision is not sufficient, since the overlapping ribs will prevent drainage through the opening, and so compress any drainage-tube which may be introduced as to occlude it. There can be no doubt that there is need for excision of a rib, to provide free drainage, in all cases of empyema except that which is due to the pneumococcus in children. The point of importance is that the drainage must be free, be the cause what it may.

An interesting series of papers upon this subject has been contributed to the Providence Medical Journal for November. 1911, by Elliott, Cooke and Wilson, and we are glad to note that Wilson calls attention to the fact that paracentesis with drainage is often sufficient. It is our belief also that where the effusion is a large one and the displacement of the heart and other viscera is great, the proper procedure is to withdraw the pus by aspiration, in order that the intrathoracic pressure may not be suddenly relieved, with the result that great changes in the position and action of the heart ensue. After the greater part of the pus has been evacuated in this manner, the further operation of incision and, if need be, excision of the rib can be performed; all these procedures taking place at one sitting, and none of them, save that of excision,

requiring the use of an anesthetic. In those instances in which drainage, and gradual expansion of the lung by proper pulmonary exercises, is not followed by recovery, it is not to be forgotten that the best method of treatment is by the injection of bismuth paste, which may be resorted to with excellent results in some cases.

As much fresh air and sunshine, with good feeding, as it is possible to obtain are absolutely essential. In these modern days, when so much attention is devoted to the destruction of microörganisms by active measures on the part of the physician, we are sometimes prone to pay too little attention to the methods of our forefathers, who were forced to rely more than we are upon the vital resistance of the individual in producing a cure, and who therefore recognized the value of sunshine, fresh air, and good food with ferruginous tonics more fully than many of their successors.

It is unfortunate that many cases of empyema are not discovered as early as they should be, and no measures for their relief are instituted until great changes in the lungs and pleura and in the position of the thoracic viscera have occurred.

It has been suggested by some clinicians that urotropin might be given freely during the course of pneumonia with the hope that it would be eliminated into the pleural effusion and so tend to prevent pleural infection. So far as we know no statistics have been published which would indicate that this theoretical advantage actually ensues, and we cannot help feeling that the pathological condition which exists in the pleura militates against the usefulness of this procedure just as it prevents the absorption of a serous effusion taking place as a result of purgation. In both instances the treatment fails because, very early in the inflammatory process, the pleural surface becomes covered with the fibrinous exudate, which seals the stomata of the lymphatics and closes the smaller blood-vessels, virtually plastering the layers of the pleura with an exudate through which the educts of urotropin cannot be poured out and through which a serous effusion cannot be absorbed.

## THE CURE OF ASCITES DUE TO LIVER CIRRHOSIS.

Talma's operation designed for the purpose of establishing collateral circulation, and thus preventing the persistence; and recurrence of the ascites due to hepatic cirrhosis, has been practiced many times, with greatly varying technique, with results which in so far as reported cases are concerned are fairly satisfactory; but these are based in the main on selected cases and on those reported at a comparatively early period after surgical intervention. Koslowsky reports 45 per cent of cures of 168 cases; Greenough 42 per cent in 105 cases; Monprofit 70 per cent in 224 operations, of which 35 per cent were permanent. Wheeler and Bunge regard icterus as a contraindication. This, however, is not generally accepted, it being held that after drainage of the bile the Talma operation is distinctly indicated, providing the venous obstruction still persists. A profoundly depressed vitality is, however, generally recognized as a contraindication, as is pronounced atrophy of the liver, as shown by bile in the urine and its absence or diminution in the feces. Bunge considers a diminished excretion of urea, increased output of ammonia, and the presence of levulose in the urine as at least serious contraindications.

As generally performed, the belly is opened by a high midline incision; the omentum is sutured either just without the peritoneum or beneath the skin. The ascitic fluid is thoroughly drained out, and continuous drainage may or may not be practiced for several days. As a variation of this procedure the omentum may be fixed between the liver and the diaphragm. The collateral circulation may be further provided for by a rough scraping of the liver, spleen, omentum, and intestines, thus encouraging parietal adhesions. As a further modification the spleen may be brought out through an incision along the costal margin and either entirely or partially fixed in a pouch between the parietal peritoneum and muscles.

Morison (British Medical Journal, Jan. 20, 1912) notes that the operation was sug-

gested to him by a post-mortem upon a man dead of cirrhosis of the liver, having no ascites because the collateral circulation, chiefly through the enlarged veins of Sappey, had relieved the portal obstruction. Morison believes that the most suitable cases are those of alcoholic cirrhosis in patients otherwise sound and in whom repeated tappings have failed to cure. None of such cases have been failures in his hands. Cases he has operated upon with ascites due to syphilitic cirrhosis have not been cured. The most unfavorable cases are those which at their commencement simulate an abdominal emergency and suffer from intense pain and tympanites preceding the development of ascites. The great danger from the standpoint of operation appears to be the development of a condition related to acute vellow atrophy, so that some other anesthetic than chloroform should be chosen. The abdominal incision should be made above the umbilicus, from the ensiform to this structure. The hand is introduced into the abdomen and the fingers projected against the anterior parietes of the middle line three inches above the pubis. A small incision is made on the finger-tip, and through this is introduced a long, small, glass drainage-tube into the rectovesical or rectouterine pouch. The abdominal cavity is dried and the peritoneum is scrubbed with The omentum is sutured to the anterior parietal peritoneum across the abdominal wall, and the upper abdominal wound is closed. An antiseptic dressing is applied over the wound and tube, and over this, from above down to the tube, a series of long circular strips of adhesive strapping. The tube now exposed through the dressings is surrounded with a sheet of dental rubber perforated to grasp it below the collar on it, and the separated tube dressing is wrapped up in the india-rubber sheet. The nurse pumps off the fluid sufficiently frequent to keep the dressings dry. should be changed in ten days, after which a small india-rubber tube can be made to take the place of the glass one. As a rule the wounds are entirely healed in one month and no further accumulation of fluid occurs. It need, however, occasion no serious disappointment if the fluid reaccumulates, since some of the most successful cases required tapping several times after the recovery from the operation. Successful cases are reported several years after operation.

#### CHOLECYSTITIS.

The collected papers on this subject, by Bayard Holmes on "The Symptomatology and Diagnosis of Toxic (Non-Infectious) Cholecystitis," by Richter on the "Pathology of Cholecystitis and Its Complications." by Engelbach on the "Medical Treatment of Cholecystitis," and by Frank on the "Surgical Treatment of Cholecystitis," constitute a most instructive and contrasting study. As to the pathology, Richter briefly disposes of this on the generally accepted principles, particularly insisting upon the fact that the term cholecystitis and gall-stones should not be used interchangeably, stone formation following infection and representing an end result. Holmes regards the gall-bladder as the most passive of the three divisions of the biliary tract. These three natural divisions are the anastomosing bile ducts extending from each secreting liver cell to the duodenum: the vasa aberrantia or redundant bile ducts ramifying in the capsule of the liver the ligaments of the liver and the under face of the diaphragm: and the gall-bladder and its duct. the pathological and clinical standpoint the gall-bladder and its duct are the most important of these three.

At the present time a few conditions only that affect the bile ducts and the vasa aberrantia and the cystic duct and gall-bladder have obtained clinical recognition. From the clinical standpoint any disease of the gall-bladder which gives rise to distinguishable symptoms is a cholecystitis. It may be a part of some other dominant disease such as typhoid or may be residual to such a condition, and at the time of observation the only morbid process in existence. It presents itself in three quite distinct clinical pictures with closely related pathological findings: First, cholecystitis, often called

empyema of the bladder, attended by chills, fever, and pain, representing infection plus obstruction. The second form is termed calculous cholecystitis: it may or may not be accompanied by infection. form is toxic, probably non-infectious, the symptomatology of which is based on 46 cases, of which 32 were operated on for drainage of the gall-bladder. The cases have all shown slight icterus and no bile pigment in the urine. Riedal's lobe is usually demonstrable, the gall-bladder palpable beyond this lobe, varying in size from day to day and tender. The liver is usually enlarged, especially the left lobe. The patients are usually in the fifth and sixth decades of life. There is a slight increase in leucocytes, high blood-pressure and cardiac disturbance, tachycardia, arrhythmia, and "missing of a beat." Indeed, the latter symptoms were usually those which brought the patient to the medical man. patients present Ewald's area of hyperesthesia in the most unmistakable manner. One patient had an attack of herpes zoster covering this area and extending from the spine to the sternum; three other patients complained of neuralgia in the ninth nerve on the right side. Metabolic studies were negative. There was usually complaint of gastric disturbance, distress after eating, eructations of gas. A large number of patients felt anxiety and depression from jumping of the heart, a number were hypochondriacal. Every gall-bladder was found at the operation to be thick, white, and filled with tarry or porridge-like material which proved sterile. There was a crystalline precipitate, cholesterin, and nearly all furnished calculi. Most of the gall-bladders were two or three times as large as normal. The operative results were excellent.

Holmes is convinced that there is a morbid process which is initiated by some irritant in the mucosa of the gall-bladder, which results in an enormous multiplication of mucous glands in this viscus; that this results in the secretion and excretion of toxic materials into the gall-bladder by these glands, which toxic materials are so absorbed by the tissues of the patient as to

result in a general toxemia, and that this toxemia produces a train of symptoms which have been briefly outlined above. The reason these symptoms are produced rests upon a selective action of these toxins upon the heart and the centrally located blood-vessels, and upon the nerves which are cognate with those that supply the gall-bladder through the sympathetic plexus.

Engelbach believes that treatment based upon infection, plus obstruction, is now considered the more rational. He holds that the consensus of medical opinion has unreservedly established the surgical treatment for chronic cholecystitis. Undoubtedly there are exceptional cases which take place in any chronic inflammation. In these cases the mucous membrane atrophies, the cicatrized gall-bladder contracts down; if calculi are present they are immobilized in a small, almost obliterated gall-bladder. These changes toward latency or quiescence of this disease are the rarest exception, and should not be anticipated in any given case. Acute cholecystitis is regarded as a much more frequent complication during the course of typhoid fever than is suspected, this local infection being probably the most frequent cause of prolonging the disease more than three weeks. Many of these cases not accompanied by local cystic duct obstruction produce no local physical findings. An attempt has been made to determine the value of various drugs and vaccines in preventing cholecystitis as a complication of typhoid fever. Calomel. salicylic acid, oil of turpentine are regarded as entirely inert. Menthol and hippole are considered as having the strongest antiseptic action, urotropin being serviceable only when given in very large doses. Typhoid vaccines furnished by the experimental department of Parke, Davis & Co. are still sub judice.

Holmes believes that medical treatment is indicated and should be carried out for the purpose of curing the incipient mucous membrane infections of the bladder in those inflammations of the gall-bladder complicating known diseases, such as typhoid. It should be carried out with the purpose of

curing the incipient mucous membrane infections of the bladder before this becomes extensive enough to produce obstruction of the cystic duct, calculi, or involve tissue beyond this membrane. That gall-bladder antiseptics, such as urotropin and menthol, combined with vaccine, preferably specific vaccine, probably offer the most promise for further observations upon the prophylactic and active treatment of acute cholecystitis.

Frank regards drainage as a sine qua non in the treatment of gall-bladder infections. Without subsequent drainage, even though the stones be removed, though adhesions be broken up and the structures entirely freed, complete and perfect recovery will not take place.

Moreover, the drainage to be effective should be prolonged or should be continued until the discharged bile is free from bacteria. He considers that it should be maintained for two to six weeks or even longer. Cholecystectomy is to be reserved only for the exceptional case.

Perhaps the contribution of most importance in this symposium is that of Holmes on what he calls toxic cholecystitis, meaning by this term an inflammation in the products of which bacteria cannot be demonstrated, accentuating especially cardiac symptoms arising therefrom, and attributing this to the toxic absorption of products engendered by newly developed mucous glands in the gall-bladder.

### REPORTS ON THERAPEUTIC PROGRESS.

## POISONING BY ACETYL SALICYLIC ACID.

KIRKMAN reports his own case in the British Medical Journal of November 25, 1911. As he well says, toxic symptoms due to this drug must be rare, since enormous quantities are now taken by the laity without doctors' prescriptions, apart from the frequency with which it is ordered by the profession.

During the hot weather the author states he is a constant sufferer from severe headaches, and has on many occasions taken doses of 10 grains of aspirin, and on one or two occasions 15 grains, without ill effects. On a very hot day last summer he was to play in a tennis match during the afternoon, and, having a headache, took two 5-grain tablets at 3 P.M. At 3.45 P.M. he started playing in the hot sun. After playing two or three games he felt his hands, arms, and feet tingling, his head felt "full," and he had a slight tendency to retch. He finished the "set," which only lasted fifteen minutes, and which ended disastrously to his partner and himself; and without waiting to explain a hasty retreat, jumped on a bicycle and rode home, which was only a few hundred yards distant. On

reaching the house he had a burning sensation over the entire body. On looking in the glass he saw his face was very swollen. with lips double the normal size, conjunctivæ suffused, and eyelids puffy. His whole body was covered with a profuse urticarial rash, his fingers, toes, and other parts being very swollen. His pulse was rapid, and out of curiosity he kept a finger on it for some time. After lying on the bed some ten minutes, it had become so rapid and running that he could not count it, and feeling anxious about himself (there was only a colored domestic in the house at the time), he staggered down to the surgery, poured out a dose of liq. strych. min. x, and drank it. Whilst the glass was at his lips he fell unconscious on the dispensing counter, scattering bottles, etc., in all directions, but must have almost immediately recovered consciousness. He managed to drag himself slowly back to the bedroom, where he remained until his wife, who had been out, returned at 6 P.M. His whole body was still swollen and covered with the rash, the face and lips being enormously puffy. The pulse had fallen to 130. Next morning the rash had gone, but his face was still slightly swollen, and the pulse was quicker than

normal. During the day he felt ill, and was unable to do his work until the evening.

On many occasions since this experience he has taken aspirin, but is careful only to take it when it is possible to rest for an hour or two afterward. This experience should make certain of our colleagues who are in the habit of promiscuously prescribing 15-grain doses of aspirin careful in selecting their cases and in advising their patients to remain quiet after dosage. [We do not think that there is adequate proof that the aspirin was responsible for the symptoms.—ED.]

#### SYPHILIS RELAPSES UNDER MER-CURIAL AND SALVARSAN TREAT-MENT RESPECTIVELY.

In the Journal of the Royal Army Medical Corps for December, 1911, HARRISON writes on this theme. He believes that in untreated cases of syphilis and those under mercurial treatment, the character of the symptoms is generally in accordance with the time which has elapsed since the primary sore made its first appearance. The intervals between the successive stages may be lengthened by mercurial treatment, but, speaking generally, early symptoms are not repeated. Thus primary sores do not recur two months or longer after they have healed, nor do early secondary rashes return in any high proportion three months or longer after they have disappeared.

With salvarsan-treated cases, the experience at the Military Hospital, Rochester Row, has been different from this. Of the cases suffering from primary sore only, which were treated with salvarsan, active signs returned in five after intervals of two and a half to ten and a half months, and in four of these the only sign of the relapse was the chancre, which recurred two and a half, two and a half, ten and a half, and three and a half months respectively after first healing. Out of eleven cases which suffered from early secondary rash when they first came under treatment and subsequently relapsed, in eight the same rash returned, twelve, four, three, ten, seven, seven, four, and seven months respectively after it had first disappeared. One of these cases was instructive in this respect: he was first treated with salvarsan for roseola, sore throat, and synovitis, all of which rapidly disappeared after the injection. Subsequently he suffered from two relapses, which occurred three and six months respectively after the first injection, and on each of these occasions all the above symptoms returned.

The sequence of events in syphilis, which has been roughly divided into primary, secondary, and tertiary syphilis, and parasyphilis, is capable of two explanations: (1) That the spirochæta pallida undergoes a series of changes when resident in the tissues, and that in each of these successive phases the symptoms to which it can give rise are peculiar to the stage at which it has arrived. (2) That it is the tissues which change, so that the longer the spirochæta acts on them, the more the lesions which result from any increased activity of this parasite approach, first, the characters peculiar to the so-called secondary, and then those of the tertiary stage.

The first explanation would be difficult to prove, and against it is the fact that infection with spirochætæ derived from a secondary or tertiary lesion results in a primary sore. In favor of the second explanation is the well-known fact that in the majority of cases of syphilis, whether untreated or treated with mercury, reinoculation does not result in the production of a second chancre. As Queyrat showed, this refractory behavior of the skin and mucous membranes to infection from without is gradually developed during the ten days which succeed the appearance of the primary sore; as the end of this period approaches the sore resulting from reinoculation becomes more and more evanescent till, finally, no chancre follows. Finger and Landsteiner succeeded in producing skin lesions in such cases by inserting large amounts of syphilitic virus in pockets under the epidermis; these were not chancres, however, but simulated the lesions from

which the patient was suffering at the time. Thus in the secondary stage a papule followed the inoculation, while in patients suffering from gummata or ulcerating syphilides identical lesions formed at the sites of inoculation. That these were due to the newly introduced spirochætæ, and not to those already infecting the patients, was shown by the fact that if the former were previously killed the result of the inoculation was negative.

The evidence is, therefore, strongly in favor of the theory that it is the length of time during which the spirochætæ have acted on the tissues which determines the characters of the successive manifestations of syphilis.

If we accept this view, the nature of the above-mentioned relapses in cases treated with salvarsan only indicates that from the date of the last injection till shortly before the appearance of the clinical symptoms the spirochætæ had not been active in the majority of cases. This is supported by the fact that in most of these the Wassermann reaction had returned to positive only three or four weeks before clinical symptoms returned, and it shows that, unlike the case with the great majority of patients who are treated with mercury, the latency was not apparent only, but real. It remains to be seen whether cases which relapse clinically many months after the Wassermann reaction has returned to positive will have symptoms of a later type than those for which they were first treated; since the Wassermann reaction, as ordinarily elicited, is not an index of immunity, but closely accords with the activity of the parasites, it is to be expected that they will.

Further evidence of the superiority of salvarsan over mercury in its action on the S. pallida is afforded by the cases of reinfection which have been recorded; one undoubted case of this kind has occurred at Rochester Row.

From the above it would appear:

- 1. That salvarsan has a more intensely specific action than mercury.
- · · · 2. That, even if a relapse does occur, as

the patient's tissues have been free from the action of the spirochætæ for the greater part of the interval, other things being equal, his health should be better than that of the patient who is treated wih mercury only.

3. That, if subsequent events justify the hope that a salvarsan resistant strain of S. pallida is not produced by repeated injections, it should be possible to prevent patients who are still in the very early stages of syphilis from developing any symptoms of a later type. To accomplish this, however, it would be necessary to watch each patient carefully, especially with regard to his Wassermann reaction, and to repeat the treatment on the least indication of the latter returning to positive.

#### ON THE USE OF RADIUM IN OPH-THALMOLOGY.

RYERSON in the Canadian Medical Association Journal for December, 1911, says he believes that in radium we have a powerful new aid to the therapeutics of the eye. In the cases of rodent ulcer and epithelioma of the lids, angioma, trachoma, spring catarrh, and in certain ulcers of the cornea. he can safely say that definite results have been obtained.

In conclusion, he asserts he can state. without exaggeration, that radium has proved its worth. As is the case with all new methods of treatment, too much has been expected of it, and the impossible has been attempted. True, carcinoma is still outside the possibilities of cure, while sarcoma, if superficially situated and of recent growth, will rapidly melt away.

#### THE ANATOMY OF SPINAL PUNCTURE.

The Lancet of December 2, 1911, points out that although the technique of spinal puncture for introducing analgesic drugs has been carefully studied the literature dealing with the anatomy of the parts involved affords few recent additions to our knowledge. The importance of an exact knowledge of the anatomy of the subarachnoid space and of the precise limits of the

conus medullaris can hardly be overrated. Early in the last century Key and Retzius made some careful studies with regard to the former, and Quincke, Gerstenberg, and Hein, as well as Propping, have extended our knowledge. Majendie's experimental work upon the movements of the cerebrospinal fluid is too well known to need comment, but when we find that much discrepancy of opinion persists both as to the site of election for puncture as well as to the causation of dangers immediate and postoperative, we are compelled to believe that the subject is still imperfectly understood. Dr. William C. Lusk (in the Annals of Surgery for October) has published a statement of the results at which he has arrived after a careful series of dissections of the whole region involved. He has located the exact position at which the spinal cord terminates, and describes minutely the arrangement of the arachnoid membrane, the position of nerves and veins. as well as the conus itself, as regards their possible injury by the puncturing needle. The dissections of the arachnoid membrane convinced him that any puncture undertaken between the conus and the cervical region must be attended with the greatest risk of penetrating the cord. In many dissections there were adhesions of the arachnoid membrane to the cord throughout more or less of its length, and Dr. Lusk concludes from this that "if cerebrospinal fluid can be constantly drawn as a result of mesial puncture at or above the level of the conus, in many instances the substance of the cord must be traversed by the needle and the fluid taken from the anterior portion of the subarachnoid space." Puncture in the dorsolumbar interspace in a certain proportion of cases results in damage to the cord, as some dissections revealed the fact that the arachnoid is not infrequently adherent to the posterior surface of the conus or cord.

Rehn has shown experimentally that injury when associated with injection of such drugs as stovaine or tropacocaine leads to immediate death with medullary symptoms.

The cases of death quoted by Dr. Lusk are of peculiar interest in this connection, and deaths otherwise inexplicable become clear in their causation if considered in the light of his work. Puncture below the level of the conus involves an accurate acquaintance with the disposition of the nerve roots of the cauda equina. Although, as the dissections show, the distribution of the nerve roots in the arachnoid sac varies, vet their arrangement in relation to one another appears fairly uniform. It is pointed out that while most of the nerve roots fall away to the sides, the lowest sacral nerve roots occupy a mesial position, and so are rendered more liable to trauma. The not infrequent paralysis of the bladder and sphincters consecutive to lumbar puncture finds an explanation in this fact.

Dr. Lusk deals carefully with the question of the sacral leverage, so important when the position of the patient at the time of puncture is considered, since in forward tilting of the pelvis, which exists in extreme lumbar flexion, the mesially placed sacral nerves will become taut and present posteriorly. Hence the pelvis must be prevented from any forward tilt, as the needle impinging upon a taut nerve root will impale it, while it will push a slack tissue aside without injury to it. The characters and arrangement of the cauda equina in these dissections are grouped into five varieties, and it is shown that even an escape of the cerebrospinal fluid after puncture cannot in all cases be accepted as a proof that the point of the needle is not engaged in some nerve structure. The site of maximum safety for performing the lumbar puncture seems from the facts advanced to be the interval between the fourth and fifth and lumbar vertebræ made mesially, while the lumbosacral space, we are told, is probably equally safe, but only second in order of desirability. Dr. Lusk elaborates the rules for the technique of the puncture, basing his conclusions upon his anatomical find-He believes that a blunt needle is safer than a sharp one, and in most cases entrance a little to the side of the middle line avoids the tougher superficial structures and allows greater precision of touch than in the case of the central puncture.

There can be little doubt that the arguments adduced and the admirable reproductions of photographs of the dissections will enable the workers in this field of surgery to understand with greater clearness the etiology of many of the dangerous and painful sequelæ which have been recorded as following the lumbar puncture. With this increased accuracy of their pathology it is not too much to expect that the present somewhat serious list of deaths and post-operative troubles may become materially curtailed.

## TREATMENT OF CHOLERA BY INJECTIONS OF HYPERTONIC SALINES AND PERMANGANATES INTERNALLY.

In describing the results obtained by this method among Europeans at Palermo, who suffered from cholera, Rogers says, in the British Medical Journal of November 18, 1911, that he is confident of the advisability of early and frequent intravenous injections. His opinion is based on the following considerations: He has never seen any harm result from an intravenous injection of hypertonic solution in the acute stages of cholera, with the sole exception of excessive temperature reaction, which is preventable if the proper precautions are strictly carried out. On the other hand, he has often had to regret the decision not to give an intravenous injection in a cholera patient coming under observation with a fairly good pulse and a blood-pressure of over 80 mm., but who subsequently required one owing to the supervention of collapse, and was ultimately lost. This shows that he has not hitherto used the intravenous method as often as is advisable, and the rules he has laid down regarding them require to be reconsidered in the light of his further recent experience.

It has been shown that the patients in whom a reliance on subcutaneous injections proved disastrous all had blood-pressures between 80 mm. and 100 mm. on admission,

so that it is clear that withholding intravenous injections when the blood-pressure is over 80 mm. is not an altogether satisfactory rule. Fortunately we have an additional guide in the specific gravity of the blood, and it is of great interest and importance to note that in all the patients admitted with a fairly good pulse, but who collapsed fatally later, the specific gravity of the blood was 1063 or over on their arrival, which means that they had already lost three or four pints of fluid from their blood. Now with such high specific gravities, continued copious diarrhea is almost certain to produce collapse within a few hours, while the blood is already concentrated to such a degree as to make the intravenous injection of three to four pints at a not very rapid rate a perfectly safe and highly beneficial procedure in cholera. Again, we have seen that once serious collapse has taken place, although death in this stage can in the great majority be averted by one or more intravenous injections, yet a considerable proportion of such grave cases will ultimately be lost from one or other of the later complications, such as severe reaction, uremic or lung complications, or asthenia. The further diminution of these still not infrequent causes of death can only be accomplished by anticipating and preventing the occurrence of serious collapse by replacing the great loss of fluid as early as possible; or, in other words, by intravenous injections as soon as the blood has become markedly concentrated, as shown by a specific gravity of 1063 or over, even though the strength of the pulse may only have fallen a little below normal, as indicated by a blood-pressure of not much below 100 mm.

The author has previously advised that intravenous injections should always be given if the specific gravity is extremely high, such as over 1065, but he would now go further and recommend this treatment to be adopted as soon as the specific gravity has risen to 1063 or over in the stage of acute copious diarrhea, in order to avert the nearly inevitable collapse if they are with-

held. If, however, the acute diarrhea stage is passed, and the reaction stage with a rise of temperature has commenced, the blood-pressure being over 80 mm., an intravenous injection is not necessary, while it is more likely to produce an excessive febrile reaction at this stage.

The author has little to add as to the prevention of uremia, except to repeat that the further reduction in the death-rate from this complication must mainly depend on the earlier use of intravenous injections to prevent the onset of collapse with the accompanying stasis of the renal circulation, which is the essential cause of the subsequent deficient renal secretion. It has long been known that the frequency of uremia is in proportion to the duration of the collapse stage. This point is further illustrated by the fact that all the fatal uremic cases at Palermo were admitted on the second and third days of the disease, while all also showed a specific gravity of 1063 or over. Several patients admitted after two or more days' complete suppression of urine, and with a high specific gravity and threatened uremia, were treated by slow intravenous injections (isotonic solutions being used if the blood-pressure was nearly normal and the diarrhea stage past), with the result that the urinary secretion was rapidly reëstablished and recovery from a very grave condition followed. If in this stage the specific gravity is not above normal, intravenous injections might produce edema of the lungs, so in that case only subcutaneous and rectal salines should be given. If the respirations continue to be frequent and labored after urine is being freely passed, edema of the lungs should be sought for, and if present all saline injections should be stopped.

Such are the lessons the writer learned at Palermo, and he ventures to hope that their application in the future will do something to still further lessen the death-rate of cholera. That cases will still be met with of too virulent a nature, or coming too late under observation to be saved from a fatal termination, it is useless to deny.

Nevertheless, these should be quite exceptional in previously healthy subjects, who are neither old nor extremely young, and who come under treatment at a fairly early period of the disease. In such he thinks the recovery-rate should be fully 80 per cent. However that may be, the results already obtained furnish a remarkable example of the successful application of modern methods of research, in discovering a life-saving method of treatment of one of the worst scourges which humanity is heir to, and one which should go far toward robbing the disease of much of its terrors in countries adequately provided with skilled medical men.

## THE TREATMENT OF BRONCHIAL ASTHMA.

LEMANN in the American Journal of the Medical Sciences for December, 1911, adopts the usual plan and discusses separately the treatment of the attacks and the treatment of the intervals. The drug that will give the surest relief in an attack is the drug which we should reach for last, namely, morphine. The distress of a paroxysm is so great, the relief by morphine. so complete and so sweet, and the occasion for the use of the hypodermic arises so repeatedly, that it is almost certain that we shall create a habit. Morphine, therefore, should be a last resort. Much safer, but also much less sure, is the action of atro-Where it is successful its effect is probably to be attributed to its antispasmodic influence on the terminal nerve endings, causing a relaxation of the contracted musculature of the bronchi. In a relatively few cases nitroglycerin, by hypodermic injection, affords relief. These are probably cases in which the blood-pressure is high. Other means of relaxing the bronchial spasm have sometimes proved useful in his hands. Some of the patients have obtained scant comfort from smoking cigarettes of stramonium leaves or inhaling the fumes of burning stramonium leaves, nitre, etc. Perhaps the most efficacious drug

next to morphine is adrenalin chloride. Where it succeeds its action is nothing short of marvelous. Hardly have the 10 to 15 drops of the 1-to-1000 solution been given under or into the skin when the patient will declare that he is already better. In fact, it has been the repeated experience of the author that the relief begins before the hypodermic needle can be withdrawn.

In view of the fact that nitroglycerin and the nitrites are supposed to relieve asthma by their vasodilator and blood-pressurereducing effects, while adrenalin is generally accounted a vasocontractor and augmenter of blood-pressure, the author has been interested in observing the bloodpressure during asthmatic paroxysms, before and after the administration of adrenalin by hypodermic. In general it may be stated that these hypodermics of adrenalin have had practically no effect upon the blood-pressure. In some instances, in fact in most instances, the blood-pressure is lowered about 5 mm. and returns within a few minutes to its original This action is the same whether symptomatic relief is obtained or not. blood-pressure of asthmatics in paroxysms as observed by him was not as a rule high; most frequently it was from 100 to 125 mm. of mercury, and in one patient as low as 90 mm. In one patient the initial bloodpressure was 165, which fell after the hypodermic injection to 148. There was no relief in this case.

#### SYPHILIS OF THE NERVOUS SYSTEM.

Morr in the British Medical Journal of November 18, 1911, asserts that it is a fact that the cases of syphilitic disease of the nervous system diminish in number and gravity with each succeeding year following infection, although it must be admitted there is no essential difference in the histological changes met with in early and late syphilis of the nervous system. It is, however, comparatively very rare for parasyphilitic affections to occur within four or five years of the primary infection, and the

average time is at least ten years after the appearance of the primary sore. that the great bulk of persons are affected in youth or early manhood, so the curve of incidence of onset of syphilitic affections of the nervous system reaches its maximum somewhere between twenty-five and thirty, whereas the curve of the incidence of onset of general paralysis and tabes reaches its maximum between thirty-five and forty. Whereas, on the one hand, syphilis of the nervous system produces more or less sudden obtrusive symptoms indicative of gross lesions due to meningeal irritation and vascular occlusion of a random kaleidoscopic character, with remissions and exacerbations causing new and variable paralytic and irritative phenomena, on the other hand parasyphilitic affections are usually so insidious in origin that it may be difficult to fix the date of the onset. Again, as a rule there is a continuous progress of the disease in which remissions and exacerbations are not nearly so manifest.

Syphilis of the nervous system, especially in the early stage, yields to all forms of treatment which would cause the destruction of the specific organism, but on the other hand parasyphilitic affections are seldom arrested; and though sometimes benefited by antisyphilitic treatment, the degree of benefit is inconsiderable when compared with the effects obtained in syphilis of the nervous system. The author asserts he has seen no disappearance of symptoms once established in tabes or general paralysis which could be associated with the treatment. Neither could we expect that mercury or arsenic in any form could restore neurones which have undergone degeneration, although when it is the syphilitic virus which is producing symptoms due to arterial and meningeal inflammation, the administration of these remedies gives relief by destroying the specific cause, and thus arresting and clearing up the inflammatory process before neuronic destruction to any considerable degree has taken place. If the spirochæta be the cause of these neuronic degenerations in parasyphilis, how does it come to pass that it has never been demonstrated in general paralysis or tabes? whereas it has been demonstrated by many authorities in syphilitic meningitis and arteritis. It might be said that there is an intracellular granule form, but this has to be proved. So far the existence of an intracellular granule form rests only on the slender basis of analogy of the spirochæta to the tick fever spirillum, which has been shown by Leishman to have an intracellular granule form.

If we admit this premise, then it must be assumed that the spirochæta pallida has passed into a resting stage, and after a lapse of years-on an average ten-it has become active and caused inflammatory changes in the membranes, vessels, and connective tissues, with secondary irritation and destruction of the neural elements. The primary meningoencephalitic theory was the old view of the parasyphilitic affections, but most authorities now consider that the diseases termed "parasyphilitic" are due to a primary neuronic decay with secondary changes in the membranes, vascular and neurological structures. This view was taken by Sir David Ferrier in his Lumleian Lectures on Tabes Dorsalis. The positive Wassermann reaction, given almost in all cases of general paralysis both by the blood and cerebrospinal fluid, would suggest that the disease was the result of active syphilis; but whereas a case of active syphilis giving the Wassermann reaction in the blood after treatment may no longer give it, this is not the case with general paralysis according to the experience of the author. He therefore assumes that until further evidence of a more definite nature is forthcoming to show that these late manifestations of a previous syphilitic infection are to be regarded as quarternary syphilis of a nature similar to glossitis, it will be better to accept the term "parasyphilis" or "metasyphilis," and to explain the symptoms by a premature and progressive decay of neural systems, localized in some cases to afferent systems, as in tabes, or generalized in others, as in general paralysis.

The author has not time to take up the possibility of there being a specific spirochæta for these parasyphilitic diseases, nor the question whether parasyphilis is a result of racial immunity by wide-spread syphilization; nor another view, that of Neisser, that the late manifestation of syphilis in the form of tabes and general paralysis may be the result of a modification of the action of the specific organism by the wide-spread use of mercury. Nor does he discuss the question of anaphylaxis as an explanation. but comes to the more practical side of the question of the differential diagnosis of parasyphilis and syphilis of the nervous system.

## THE PHYSIOLOGICAL ACTION OF EXTRACTS OF THE PINEAL BODY.

IORDAN and EYSTER in the American Journal of Physiology of December 1, 1911, state that their experiments indicate that the pineal gland of the sheep contains some substance (or substances) which, on intravenous injection in certain animals. cause a fall of blood-pressure associated with a vasodilatation in the intestines, produce a slight degree of improvement in the beat of the isolated cat's heart, and cause a transitory diuresis associated with glycosuria in about 80 per cent of the They have found, in agreement with Dixon and Halliburton, that the effect on blood-pressure in the cat is small and unimportant. It should be noted that their extracts were in all cases more concentrated than those employed by these investigators. On the whole, their work would seem to indicate that while certain definite effects on the circulation and secretion of urine are produced in certain animals as the result of intravenous injections of extracts of the pineal body, the action is relatively slight when compared with that produced by extracts from other glands known to furnish internal secretions.

Their experiments deal obviously only with a possible rôle of the pineal body in producing certain relatively rapid effects on the circulation, respiration, and secretion

of urine. They leave entirely untouched the possibility of more gradual effects over longer periods of time, as well as the influence these bodies may exert on metabolism or other functions and their relation to other organs of internal secretion. From the experiments of Dixon and Halliburton, and those recorded in this paper, it seems clear that the first-mentioned influence, so far as it is exerted by any substance produced in the organ, must be relatively small and unimportant.

#### CHRONIC ALCOHOLISM.

PETTEY writing in the Journal of the American Medical Association of November 25, 1911, asserts that the indications to be met in some cases of alcoholism are simple, and the treatment can be easily carried out, while in others they are so complicated that the resources of the best-equipped institution as well as the skill of the most resourceful physician will be taxed to the uttermost; but with the aid afforded by a well-equipped institution a competent physician can effect as large a percentage of cures in cases of chronic alcoholism as can be effected in any other serious ailment. The most skilful physician cannot treat patients successfully at their homes. disadvantage due to their home surroundings and to lack of complete control over the patient will defeat his best efforts. Even a general hospital does not assure the physician such control and protection as this class of patients require.

The author wishes to utter a warning against any institution or physician offering to send a home treatment for alcoholics or drug victims. Such an undertaking is worse than folly, and when a proposition of that kind does not spring from entire ignorance of the conditions to be met, it is prompted by criminal avarice. Especially fraudulent is the offer to send a remedy that can be administered in coffee, etc., without the patient's knowledge, and thus overcome the desire for liquor and break up the habit.

The time required for the successful

treatment of a case of chronic alcoholism varies from two weeks to two months. Those who promise to effect a cure in much shorter time than that promise more than they can perform. A "three-day liquor cure" is being advertised extensively throughout the country, and a number of institutes have recently been opened for the employment of this method. The treatment consists of the administration of a dose of cathartic pills, and after that the hourly administration of an emetic in liquid form, the emetic consisting of either lobelia or ipecac or of the two combined. An hour and a half from the time of giving the first dose of the emetic, the patient is required to take a drink of whatever alcoholic liquor he has been using, and this is repeated every half-hour until four drinks have been taken. All of these are promptly given over to the slop-jar with interest. liquid emetic is kept up every hour for the first day, but only the four drinks are offered to the patient. If he asks for more liquor, it is given, and this is followed by an extra large dose of the emetic, sufficient to insure immediate and prolonged vomit-The second and third days' treatments are the same, only the emetic is given at less frequent intervals, and only two drinks are required to be given on the second day. If the patient asks for more on that or on the third day, it is given, and this is followed by a double dose of the emetic.

The extreme nausea and vomiting from this course, if the patient can be made to take it, is supposed to disgust him so completely with whisky that he will not take it again. By the time he has been kept in this condition for three days he is so disgusted with whisky, himself, and everything else that an effort to swallow anything will cause him to vomit. It is true that he does not want whisky, because he is not in condition to take and retain anything, but he is no more cured of the whisky habit than he would have been had he drank until his stomach rebelled and had vomited three days and nights from the effects of whisky. His system is still in a badly disordered condition; he is extremely nervous and cannot sleep, is totally unfit for business, and if he recovers it is because of the restorative forces of the system and not because of any curative effect the treatment had on him. Such sleight-of-hand fake methods cannot be too strongly condemned. There is no curative value in them, and the public should be taught to avoid them.

In undertaking the treatment of alcoholic patients, the physician should take a comprehensive view of the patient and his surroundings and endeavor to estimate correctly every influence which has in any way contributed to his enslavement, and to direct the life of the patient thereafter so far as to remove every one of the hurtful influences, as far as is possible. The physical man must be completely renovated and every function of the body restored to normal activity. The mental bias favorable to the use of alcoholic liquors must be eradicated and in its stead a positive aversion to alcohol must be established. The patient is to be given a new chance in life by being put on his feet with a clear head, in full control of all his faculties, and free from the dominating influence of alcohol. The consummation of such a work is certainly worthy of the best efforts of any man.

#### POSTPARTUM HEMORRHAGE.

In concluding an article on this subject in the Australian Medical Journal of October 21, 1911, HOOPER expresses these views:

Just as surely as the improper use of forceps, or the careless administration of anesthesia, causes the uterus to delay its firm contractions and retractions, so just as surely, if not more so, does delay in using instruments at the right time cause the woman to become so exhausted that her uterus is unable to contract firmly.

The author is a strong advocate for the immediate application of forceps in cases in which experience tells him that without their aid the uterus would be unable to expel the child, and he would strongly insist on the more cautious use of the anes-

thesia during the second stage. Still more would he most earnestly urge constant attention to the uterus directly the child is born, and particularly to the right way to perform the Dublin method of expressing the placenta. Of course, if violent hemorrhage occurs immediately following parturition due to an obviously relaxed uterus, he would immediately proceed to make the uterus contract by external manipulation, by the injection of pituitary extract, or hot sterile water at 120 degrees, and if the cord were pulseless and the placenta were in the cavity of the uterus, he would carefully and slowly extract it with his clean and gloved right hand, while the left hand retained the mastery over the uterus. This is the only condition which would make him hurry the third stage of labor.

Weber evidently considers tamponade to be the very best treatment performed in a proper manner by the use of sterile gauze under every aseptic precaution, it being especially important to pack the whole cavity of the uterus; the vagina should also be packed. He finds the packing, to be successful, must be allowed to remain for six hours at the most, when the uterus will be found firmly contracted and hemorrhage does not recur, because:

First, the pack acts as a foreign body and the uterus tries to rid itself of the same.

Secondly, by a mechanical pressure upon the lumina of the bleeding vessels by the gauze.

Thirdly, the blood coming into contact with the gauze clots more readily, and thrombosis in the vessels occurs.

Ahfeld and Veit oppose packing. Veit says he has not seen a single case of post-partum hemorrhage which would induce him to pack on account of hemorrhage. Personally, the author dreaded the risk of sepsis wherever he has used the uterine tamponade, and seldom uses the tamponade because it distends the uterus rather than making it contract.

At the Basle Women's Hospital, out of ten thousand confinements, seven died from postpartum hemorrhage, of which six had been tamponaded. Weber claims that the use of Momberg's treatment in many clinics is so favorable that it must be considered a dependable one in serious cases of uterine atony, and as such is to be recommended to the general practitioner.

Momberg's method consists in passing a stout rubber tube several times round the body between the pelvis and the lower costal margin, and tightening it until pulsation in the femoral arteries ceases. The patient is given ½ grain of morphine.

The tube is about the thickness of a thumb, and 21/2 to 3 yards in length. It is placed just above the iliac crests and is slowly drawn tight by two people. When femoral pulsation ceases the tube is fixed with a pair of forceps. It is more easily adjusted if it be oiled at first, and as a rule it is not necessary to wind it round the body more than twice. When pressure is made the coils of the intestines slip up toward the thorax, but if any of them be compressed they remain for a considerable length of time without sustaining injury. The ureters also escape damage. The tube is kept tight for ten to thirty minutes, and it is slowly relaxed, the lower limbs being well bandaged first-if hemorrhage recurs it is readily readjusted. Out of 30 cases reported, 28 have been successful. these, eight were due to atony of the uterus, 12 to retained placenta, and two to laceration of the cervix. This method gives the obstetrician time for disinfecting his hands and the parts before manipulation. Patients tolerate the treatment well, though collapse may follow the removal of the ligature, the blood rushing into the lower limbs and producing anemia of the brain or heart. This may be obviated by the Trendelenburg position or by tilting the bed. Where other methods fail, this one may be the means of saving life.

Baudeloque's method of digital pressure of the aorta at the level of the fourth lumbar vertebra is difficult and inconvenient, and is not always effective, since the ovarian arteries, which branch off just below the bifurcation of the aorta, carry blood through the uterus, and a flow through them is not checked by Baudeloque's method. The inferior vena cava is compressed at the same time, and that is undesirable.

Briefly, then, the indication for treatment in certain cases of postpartum hemorrhage, and they are the most serious, lies in using every known effort to make the uterus contract without making any immediate attempt to empty the uterus of any piece of placenta which may remain within it.

## THE TREATMENT OF CHRONIC HYPERTENSION.

VISSCHER in the Journal of the American Medical Association of December 2, 1911, says he believes that there are influences productive of chronic hypertension which are to be mastered only by the intelligent conduct of our patients. It seems beyond doubt that mental overactivity stimulates both pituitary gland and adrenals, which throw pressor substances into the circulation. What lack of sleep will do, and the absence of relaxation to the brain (which is the characteristic of worry), what influence on hypertension must be attributed to the well-known though ill-admitted fact that libido sexualis, especially in man, is kept overstimulated in city life, can only be presumed. All considerations combined. it seems that hypertension has to be met and treated more during the hours the patient is away from work than when he It is well-nigh impossible to divert the mighty current of business life, as long as ambition is met by limitless opportunity, and the multifarious enjoyment of so-called excitement can be bought only by overstraining the earning power.

As to the hours of sleep, it should be better understood that carbonic acid is of high pressor power, that sleep in ill-ventilated rooms will interfere with metabolism during one-third of our lifetime, a time additionally spent in the digesting and assimilation of the heaviest meal of the day. Invariably, for reasons already given, people with hypertension would do better to eat light evening meals with ease thereafter for a few hours, then take a mod-

erate amount of physical exercise, a warm bath, perhaps a warm enema, and sleep in a warm bed with the windows wide open.

A few remarks on drugs follow: Do iodides act through reduction of viscosity of the blood (Romberg) or through thyroid stimulation? Or does the thyroid act through its iodine in organic compound? We know that they do reduce headache and precordial pain; they do not lower the blood-pressure in advanced hypertonic arteriosclerosis; they do everything in syphilitic arterial disease. They should be given with great caution, since Krehl's warning, in cases which show thyroid enlargement, as it has happened too often that a daily amount of 15 grains of the potassium salt during two weeks caused very rebellious thyroidism. As iodides have to be continued for long periods, an alternation, as Elsner advises, from the sodium through the strontium and rubidium to the potassium salts will be commendable. Sajodin has been well tried.

Of decided benefit is theobromine, a dimethylxanthin, a congener to caffeine, a trimethylxanthin. Xanthins are pressors, still through direct stimulation of the renal tubar epithelium (if this be not diseased) in large amounts they cause a fall in blood-pressure. Diuretin acts somewhat similarly. Ever since Huchard introduced theobromin, we have found it potent in angina and anginoid states up to 7½ grains, well distributed during the day.

Though nitrites relieve anginoid suffering, they do not always do so by a general lowering of blood-pressure. After using sodium nitrite, the author has repeatedly had good reports from his patients. These reports were accompanied by higher manometric readings. MacKenzie's observation is instructive. During an attack of angina with a pulse-pressure of 190, amyl nitrite gave instant and complete relief, the pulsepressure rising to 200. This change evidently denotes the action on the coronary Still we must be aware of an angina with low tension due to dilatation or myocarditis or even aortitis. Their excessive dilatation of the cerebral vessels limits their use in hyperpietic nosebleeds. Erythrol tetranitrate the author asserts he has given zealously, but had to reduce the doses greatly to prevent the violent headaches so often caused by it. An advantage of the nitrites is in their combination with the tonic cardiacs, if needed. Aconite is of noted help in the excessive hypertension and pounding heart in toxemia of pregnancy. Moreover, double-drop doses during the day have given great relief without perceptible harm to the heart.

Chloral, veronal, and medinal are reliable agents to procure sleep when attacks of vertigo, dyspnea, and pounding heart make the night a time of horror, and chloral may be given in effective doses; perhaps too often our patients fail to receive relief, which is withheld from them by our fear of doing harm. From year to year a new hypnotic comes on the market, which surpasses all its predecessors in effectiveness and absence of depressing effects on the heart. But it is just this depressor effect of the chloral group, which aids in combating the dyspneic unrest, which robs the patient of his sleep. Small doses of chloral during the day are very helpful by their depressor effect.

In this respect the author adds that in the senile heart, both with and without hypertension, digitalis is an ideal drug and should not be withheld on account of its pressor power. A good deal of this hypertension, already compensatory, is due to venous stasis, with rest, massage and partial depletion; the use of digitalis for a few days, guarded by some iodide or nitrite. will tone the myocardium and bring decided improvement. The use of bromides for three or four days at a time will help. With thiosinamine, fibrolysin, and sulphocvanite of sodium the author asserts he has only a bowing acquaintance. And very recently, on Rumpf's recommendation, he has begun the application of high tension oscillating currents, which can be easily given as a house remedy.

As in the degenerative changes accompanying secondary arteriosclerosis the deposit of calcium salts adds to the rigidity of the artery, it has been deemed well to reduce the lime intake, which means the exclusion of hard water, the theoretical limitation of eggs, cheese, rice, asparagus, carrots, and milk. On these grounds, strontium or sodium lactate is given. One of the latest drugs, sulphocyanite of sodium, derives its supposed effect from its calcium dissolving potency.

A practical question is, How does altitude influence hypertension? It is as yet hard to answer, though in rough outline there is an apparent parallelism between atmospheric pressure and blood-pressure.

The author states that in California they acquire the necessary information by sending their people on trial trips to any altitude desired; again it all depends on the heart's tonicity.

When the crest of this wave of hypertension which has struck our profession will have passed, leaving in its wake many a shattered notion, a flotsam and jetsam of sphygmomanometers, broken cuffs, and pressure records, the level of our useful knowledge will have come up to a more adequate management of this pathologic May we learn and teach not to grow old before our time, for growing old before one's time is what hypertension To depress hypertension in the aged is to take the wind out of his sails. which carry his lifeboat into the haven of rest; to reduce the hypertension in the man of forty-five is to save him from shipwreck on the banks and cliffs of the very Golden Gate of mature life.

#### A CASE OF CAMPHOR POISONING.

The Calcutta Medical Journal for August, 1911, contains a report by Roy of camphor poisoning.

A Hindu married woman aged 28 had an attack of choleraic diarrhea in the month of July. She had copious stools and vomiting. The husband of the woman was a railway guard and little educated. He purchased a bottle of Rubin's spirits of camphor and left instructions in the house to give according to written direc-

tions. Some one in the house, thinking that real and sure cure lay not in small doses but in heroic doses, administered the whole bottle of camphor in three doses. The diarrhea was stopped, but the patient began to vomit, and there was a terrible burning pain in the stomach and the throat.

The author saw the patient three days after the accident. The patient still complained of pain in the throat and stomach, and vomiting was still present. She was anemic and pale; conjunctiva was bloodless. She did not take any food, as there was complete loss of appetite, and she complained of thirst.

She seemed to be in a helpless condition—quite restless, sometimes sitting, sometimes lying down, often in pitiable postures. She had a low muttering delirium, a vague look, and seemed inwardly suffering from some anguish which she could not express.

There was fever in the beginning, but when the author examined her he found her cool. Palpitation of the heart was present, and there were occasional symptoms of suffocation. The pulse was slow and feeble. The lungs were quite free. The bowels were constipated and the urine scanty.

As she had had no sleep for some days, she was given a bromide mixture with belladonna. She slept well, but delirium was not abated in the beginning. She was given whey and barley water to make elimination free. No solid food was given for four or five days until the burning sensation in the throat and stomach passed away. On the fourth day Roy had to give her some gastric sedative to allay the pain and irritation. She was less delirious now, but sometimes talked incoherently. Her mother was brought down from up-country, and this soothed her mental condition. She still complained of palpitation.

She was now given milk and soup daily. She gradually rallied, and the palpitations improved.

Camphor poisoning is very rare and generally not fatal. Taylor mentions the case of a woman who took twenty grains of camphor and in whom serious symp-

toms occurred, but recovery eventually took place. Blyth mentions the case of a woman, pregnant four months, who took about 184 grains of camphor with the obiect of procuring abortion; she suffered severely, aborted, and died in a comatose condition. Davies mentions a fatal case of camphor poisoning which occurred in a child aged two years and eight months, after eating a piece of solid camphor weighing about 30 grains. Chevers records two cases—one had camphor administered with sweetmeats: he died after two days. The other took a pice worth of camphor. Hehir mentions a case of camphor poisoning in a woman who took two ounces of spirits of camphor to relieve headache and other discomforts associated with suppressed menstruation. Blyth is of the opinion that from 7 to 40 drops of Rubini's camphor have produced coma, foaming at the mouth, convulsions, partial paralysis.

## ADRENALIN CHLORIDE IN THE TREATMENT OF CARDIOVAS-CULAR COMPLICATIONS OF LOBAR PNEUMONIA.

Brown in American Medicine for November, 1911, expresses the view that the cases which have a very sudden fall of pressure may best be compared to a steam engine running under a normal pressure of steam which is subjected to the sudden withdrawal of the load or resistance. The immediate result of this will be a racing and destruction of the engine, unless the load or resistance can be quickly reintroduced. A similar condition exists in the heart under these circumstances, and as the vessels fail to respond to the vasomotor control the heart will increase in rate and be accompanied by pulmonary edema, death intervening due to an exhausted heart. The problem of treatment is therefore to introduce some substance which will quickly cause a contraction of the peripheral vessels and act as a governor. It is necessary that this peripheral resistance should be sustained for some time to be of any great value. To determine whether adren-

alin possessed this property, he conducted a series of experimental injections, selecting the intramuscular administration in preference to administration by mouth, because of the uncertainty of action when used in the latter way, and in preference to the intravenous method, because of its slow absorption from the muscle. these experiments he selected patients between the ages of twenty and fifty, whose arteries should still retain the possibilities of contraction and dilatation. All of these patients were given 15 minims every twenty minutes for four doses, the pressure being taken every hour thereafter until it returned to the low point. They found the pressure would be maintained above the point recorded before the injection for about four hours, and the rise would be noticeable about fifteen minutes after the first injection, the maximum pressure being reached in about one and three-quarters to two hours from the time of the first injection.

A second series was given to some of these patients, resulting in a second rise sustained for about the same length of time, thereby demonstrating that the blood-pressure would be maintained for a considerable period and a perfect response to a second series if it became necessary to maintain the pressure for a longer period of time.

The author advises the intramuscular injection of adrenalin chloride only in cases of impending pulmonary edema if they present the clinical picture of low pressure. He believes that it should be used in 10minim doses before any signs of edema appear, provided the pulse shows a marked tendency to increase in rate and the bloodpressure is below 110, and the other symptoms of vascular dilatation are present. If edema develops suddenly during a pneumonia it should be used in 15-minim doses every twenty minutes for a series of four to six doses, or until the symptoms are controlled, and this series should be repeated if there are any signs of a return of the edema; provided we have definitely differentiated this edema from the edema accompanying acute dilatation of the heart.

## A RAPID METHOD OF INOCULATION AGAINST TYPHOID FEVER.

NELSON and HALL, of the Medical Corps of the U. S. Army, have this to say about the equipment, personnel, and technique which they advise. In their regiment the equipment and personnel used for the rapid inoculation of a large body of men was as follows:

Equipment.—One alcohol stove with a shallow pan of about one-quart capacity. Two hypodermic syringes of a make which permits sterilization by boiling, with six sharp needles for each. One bottle each of tincture of iodine and collodion with camel's-hair brushes. Two boiled medicine glasses, some clean towels, and a small quantity of sterilized gauze.

Personnel.—Two medical officers; one sergeant, hospital corps, in charge of the individual record of the inoculation; one private, hospital corps, to apply iodine to the arms; one private, hospital corps, to apply collodion to the needle punctures; one private, hospital corps, in charge of the stove with constantly boiling water.

A box or something suitable for use as a table is covered with clean towels, and on these are placed a few pieces of sterilized gauze to receive the sterilized syringes and needles and the sterile medicine glasses containing the vaccine.

The inoculator immerses the needle in the vaccine in the medicine glass; after filling the syringe he stirs the vaccine by discharging the syringe into the glass; this is done several times, and should be repeated at frequent intervals throughout the inoculation because of the fact that the vaccine being a suspension and not a solution, precipitation of the bacilli will occur, and dosage (as far as numbers of the bacilli administered) would not be uniform.

So far as the inoculation is concerned, it is immaterial whether or not the subject has had a bath the same day or a week before.

On arrival at the infirmary the men are directed to roll their sleeves well up to their shoulders. An assistant with iodine then paints an area about 15 mm. in diam-

eter at the insertion of the deltoid muscle. This completed, the man steps forward to the physician, who is ready with a syringe with sterile needle attached and filled with well-mixed vaccine. The needle is plunged into the skin through the iodine-painted area, the proper quantity of vaccine is discharged and the needle withdrawn, when the man passes to the assistant who applies collodion to the needle puncture, thus sealing the wound at once. The man is directed not to roll his sleeve down until the collodion has hardened, when the operation is complete.

After an injection has been given, the inoculator detaches the needle used, and it is transferred to the boiling water by the assistant in charge of the stove, who returns a clean needle from the boiling water to the inoculator. The needles are withdrawn from the water in the order of their entrance. This arrangement and the number of needles used permits one needle to be in use and five needles to be constantly boiling.

In their regiment and with this method. by which each man has a freshly boiled needle and a sterile hypodermic (which, by the way, is reboiled once every hour), they have been able to vaccinate men at the rate of 300 inoculations per hour. The efficiency of their cleanliness and the accuracy of their dosage has been demonstrated by their results, which are here enumerated:

- 1. In this series of 3500 injections of the vaccine they have not had a single case in which the temperature rose to 102° F.
- 2. No infection of any character has been observed, not even a suspicion of such an accident.

And last but not least, there has not been any evidence of any ill effect of any nature whatever which, in their opinion, can be traced to the vaccine.

These results they attribute, of course, to the accurate preparation of the vaccine and also to their method of administration, in which the iodine, careful sterilization of instruments, and most careful mixing of the vaccine in each syringe dose given were used.

Care must be observed to give the vaccine subcutaneously and not intravenously, as has happened in one case which was noted by them, but did not occur in their regiment. In this case of intravenous inoculation the puncture was not made at the insertion of the deltoid muscle but well down on the anterior aspect of the arm.

In this case the reaction was extreme, temperature high, diarrhea; malaise and herpes labialis were marked, and prostration existed for three days. At the site of puncture absolutely no local reaction was noted, not even redness—and the reaction commenced almost immediately after the inoculation, significant evidence that the vaccine entered intravenously.

In this series of inoculations not a single case reached a temperature of 102° F., and in not a case did the reaction exist longer than twenty-four hours; in the vast majority the reaction was over in twelve hours. The reactions are considered under the heads local and general.

As a rule the *local* reactions were more numerous after the first dose, less so after the second dose, and of least frequency of occurrence after the third dose.

To them a typical reaction consists of an acutely inflamed area surrounding the point of inoculation. The size of this area may vary from 1½ to 3 or 4 inches in diameter. It does not look like an abscess. It is hard and indurated and has considerable local temperature, the entire arm may ache more or less, and the axillary glands are somewhat tender.

The height of this reaction is reached within eight or ten hours, and by the end of twenty-four hours, although the area around the point of inoculation is still red, it has ceased to be painful and the patient ignores its existence. It is the opinion of the authors that a local reaction extending over a period of time greater than twenty-four hours is caused by some other agent than the vaccine.

In this series of inoculations a systemic reaction was noted in about 7 per cent, and was most frequent after the second dose, next after the first, and of least frequency

after the third dose. It consisted of a temperature of about 100° F. and malaise; these were consistent, and, in exceptional cases, there were diarrhea, insomnia and nervous symptoms, herpes labialis, and, most rare of all, an acute general erythema with an occasional spot not unlike a "rose spot."

The other symptoms noted are irregular in character and vary in duration. Insomnia and nervous symptoms may last for forty-eight hours, but as a rule are over within twenty-four hours.

In their regiment provision was made for these reactions by excusing the men treated from all duty for twenty-four hours after inoculation and instructing them to avoid alcoholic drinks, muscular exertion, and exposure to the sun, for it is their belief that failure to observe these precautions after inoculation will, in a large percentage of cases, result in a sharp reaction, which can be prevented by strict observance of these instructions.

#### DRUGS IN RHEUMATIC CONDITIONS.

STOCKMAN in the London Practitioner for January, 1912, writes on this topic:

The practice is to give at frequent intervals as large doses of salicylates as can be conveniently tolerated, and this is justified by the fact that all salicylate compounds are rapidly excreted from the body by the kidneys, and further, that before excretion they are converted into an inert compound with glycocoll-salicyluric acid. Therefore, in order to have the drug circulating in the body fluids in an active condition the supply must be relatively large and frequently repeated. For the patient's comfort it is necessary to avoid the use of doses which are unnecessarily large, as they bring on the familiar symptoms of deafness and ringing in the ears, which may be taken in the majority of cases as a hint to reduce the amount.

Profuse perspirations and skin eruptions are other inconveniences which frequently follow the administration of salicylates. There is a very widely held idea that they also act as heart depressants, but this is not borne out by exact observations on the blood-pressure in man or by experiments on animals. They bring on a certain feeling of inisery and depression in many people, but this is attributable to an action on the nervous system rather than on the circulation.

With larger doses (250 to 400 grains per day), such as are sometimes given with the idea of thoroughly destroying the infective germ, vomiting frequently occurs, and it is possible not only to seriously depress the nervous system, but to bring on a dangerous condition of lessened alkalinity of the blood—"acidosis," as it is sometimes called. With the lessened alkalinity metabolism is upset, with the result that acetone appears in the urine and breath, while the patient becomes drowsy and lethargic or restless and delirious, and may suffer from disturbed respiration and "air-hunger." this, except the vomiting, can be prevented, to some extent at least, by giving about twice the amount of sodium bicarbonate with each dose of sodium salicylate, and taking care at the same time to avoid the occurrence of constipation. As a rule, cases can be efficiently treated without the risks and anxiety consequent on such large doses. In an ordinary case of moderate severity 15 to 20 grains of sodium salicylate every three or four hours form a sufficient dose. With these amounts the pain in the joints and the temperature begins at once to be favorably affected, the former subsiding in from twelve to twenty-four hours, and the latter within forty-eight hours. The pulse and respiration fall with the temperature, and the joint effusion is absorbed in two or three days. The course of events resembles a crisis. Sometimes it is slower and resembles a lysis. If the temperature does not settle satisfactorily each dose may be increased, or one large additional dose of 40 to 60 grains may be given on one or on several days in succession. The administration should be kept up in the same or smaller quantity until the temperature has definitely settled to normal. If any relapse occur the salicylate should be at once increased. Additional absorption of salicylic acid may be brought about by applying a dressing of methyl salicylate on lint to the affected joints, and this has the further advantage of acting as a local anesthetic and soothing pain.

Both in adults and children the rheumatic infection may locate itself chiefly in the fibrous tissues and may leave the joints comparatively unaffected. In such cases the colonies of microbes lying deep in the valves of the heart, in the pericardium, periarticular tissues, and elsewhere, seem to be protected from the action of the salicylate, which, probably, only reaches them in small amount, and hence the response to treatment is not so rapid or satis-Nevertheless, they generally in time yield to large doses along with free local application of methyl salicylate, but often not before one or more of the cardiac valves have been permanently damaged, or rheumatic thickenings have formed in other fibrous tissues. When these rheumatic indurations are quite recent the administration of potassium iodide and the application of small blisters exert a marked deobstruent effect. Massage is even more effectual if they are in situations which can be reached by it, and it is a good plan to massage every case in which they can be detected, beginning as soon as recovery from the acute infection is definitely assured. This prevents them becoming fibrous and chronic.

#### ETHER ANESTHESIA.

Mahoney in the Boston Medical and Surgical Journal of October 19, 1911, has this to say concerning postanesthetic care:

From the time the administration of the anesthetic is discontinued until the patient has recovered consciousness, he should be closely observed, as it is during this stage that many disturbances of respiration may arise. Too much care and gentleness cannot be exercised in the transfer of the patient from the table to the truck or bed. By placing a folded sheet under the patient while on the table and using it as a ham-

mock, he may be transferred with the least amount of upset, thereby preventing or minimizing the postanesthetic nausea and vomiting.

It is an excellent practice, when circumstances permit, to turn the patient well upon his right side when he is put back to bed, as suggested by Hewitt, and to place a pillow at his back. In this position, stertor generally ceases; the tongue gravitates to the side of the mouth; a free airway is established; mucus and saliva are not swallowed; and should vomiting occur, any vomited matter will readily find an escape without interfering with breathing. The patient's chin should not be too near the sternum as it may interfere with breathing and retard the recovery.

It is the opinion of many observers that one of the common causes of postanesthetic nausea and vomiting is an irritation of the gastric mucous membrane by ether-laden mucus which has been swallowed. condition may persist and become distressing despite our efforts before and during anesthesia to prevent it as far as possible. Gastric lavage is frequently tried. patients will wash their own stomachs without subjecting them to the use of the tube. Hewitt advocates giving the patients a tumblerful of hot water to which has been added a small teaspoonful of bicarbonate of soda. Buxton speaks highly of the addition of bicarbonate of soda to black coffee. The atropine given before anesthesia certainly helps to overcome or diminish this stomach upset. patients are frequently relieved by the use of an enema consisting of sodium and potassium bromide, of each 15 grains, in 4 ounces of warm water.

Occasionally we meet with a case in which we have made every effort from start to finish to prevent the postanesthetic discomfort. Some of these cases obstinately resist all treatment, but with this type of case we must not lose sight of the fact that the persistence may be due to acetonemia. This condition may be recognized by nausea and vomiting, the patient being in a drowsy condition, sweetish odor to breath, and the

presence of acetone in the urine. Copious enemata of a saturated solution of sodium bicarbonate administered slowly, and teaspoonful doses of aromatic spirits of ammonia given frequently by the mouth, may relieve the condition.

## THE ASEPTIC TREATMENT OF BURNS AND SCALDS.

PORTER in the Journal of the Royal Army Medical Corps for November, 1911, reminds us that the treatment of these injuries by the ordinary method of oily applications is most unsatisfactory. The use of picric acid may be less so, but the author has had no experience with it. He does know, however, that extensive scalds or superficial burns, owing to their always being infected when they come under treatment, usually suppurate. This leads to further destruction of tissue, and scarring is very apt to ensue. At any rate, these injuries when treated in the usual manner with oily applications remain a very long time in hospital and convalescence is slow. Having lately seen an instance of a large scald (by boiling water) in which healing took no less than seventeen weeks, in spite of grafting, the author determined to treat the next case he saw by strictly aseptic methods from the very commencement.

On May 1, Gunner D. was admitted to the Alexandra Hospital at Cosham, having slipped into a copper of hot water. The right leg was scalded as high as the popliteal space, but the fore part of the foot and anterior surface of the leg escaped. He had been dressed with carron oil and lint before arrival. The author injected ½ grain of morphine and had him anesthetized at once.

After removing the dressing, the whole of the limb was thoroughly washed with plenty of methylated spirit poured from a bottle and scrubbed by sterile swabs. The scalded surface was freely rubbed by the swabs, and all the denuded epithelium removed. At least ten minutes were occupied in this manner. The limb was then washed with iodine water, one drachm of

tincture to the pint. After this, plain white sterile gauze was placed in contact with the raw surface, and absorbent wool and a bandage over all.

Next morning the temperature was normal and the patient quite free from pain. There had been such considerable exudation that the dressing was saturated. The author thought it advisable to remove the wool and apply fresh, but the gauze was not touched. This was done again next day, and the leg was then kept outside the bedclothes to promote evaporation, and to try and get the wound to scab. The leg was slung next day from a cradle, and this materially assisted matters.

On the morning of the tenth day the cotton-wool was removed, and the gauze was found perfectly dry over the whole area, with the exception of a place over the inner ankle and center of the calf; the gauze at these places was soaked with pus, but no organisms were present. Over the rest of the leg the abraded surface had healed beneath the gauze. After soaking it off, the limb was slung from a cradle exposed to the air for four hours and a sterile gauze dressing reapplied.

The gauze again became soaked with pus over the unhealed areas, and so all dressings were again removed and the abraded surfaces dusted with boric powder and the limb kept slung. Final healing took place about the thirteenth day.

The ultimate result of this method of treatment was, he thinks, considerably better than one would have got if the injury had been dealt with by oily or greasy applications, but it is quite possible that one might improve on it. The great obstacle to immediate scabbing is, of course, the tremendous exudation of serum which follows the injury, and this is much accentuated by the scrubbing which one makes use of in order to sterilize the affected area. It was suggested to the author that it would be a good plan to have slung the limb from a cradle covered with gauze for a couple of days, but in addition to the risk of infection, the exposure of a large raw surface to the air would cause intolerable pain.

Adye-Curran's suggestion, vjz., to employ continuous immersions until the bulk of the exudation had ceased, and then to apply a sterile dressing, might be worth considering, but there would again be the risk of infection. Another plan would be to smear the part with sterilized vaselin before applying the gauze.

Extensive injuries of this kind do not occur very frequently, and the author is therefore recording his results in this case in the hope that others may be induced to try some other line of treatment than the oldfashioned carron oil application.

He thinks if he had applied ointment to the small raw surfaces which were evident when the gauze was removed on the tenth day, instead of trying to get scabbing under boric acid, much more rapid healing would have resulted.

#### TREATMENT OF ACUTE ENDOCARDI-TIS AND MYOCARDITIS.

MEARA in the Journal of the American Medical Association of February 3, 1912, writes on this subject. He says there are three objects to be aimed at in the use of drugs in acute cardiac disease: (1) To control or modify the progress of the disease of which the endocarditis is a part or complication. (2) To affect the progress of the cardiac condition itself. (3) To meet the needs of the heart as they arise—i.e., symptomatic treatment.

1. In the acute endocarditis of rheumatic fever, the salicylates should be continued in full dosage, 15 and 20 grains every two hours during the waking period—that is, there is no modification of the use of the drug when the endocarditis intervenes. is impossible for one who has the opportunity to see many cases of rheumatism not to be impressed with the striking effects of the salicylates in rheumatism; and though it is agreed that the progress of the cardiac disease is not modified like the events in the joints, still it does seem irrational to neglect the only measure that can demonstrate its efficiency in other phases of the disease, if the drug does not depress the

heart, which Meara thinks is a very rare occurrence even in such doses as he advocates.

He acknowledges, however, that there is a wide divergence of opinion in this matter. While some men would push the salicylate to much larger doses, others contend that it is not safe or efficacious.

The one other mode of treatment directed against rheumatism, which has much vogue, is the alkaline, and it is contended by its advocates that it has a decided effect on the cardiac inflammation.

He does believe that the use of the alkali makes the salicylates better borne, and he is accustomed to combine the treatments.

A rough rule is to give double the dose of salicylate in alkali—e.g., if giving 15 grains of the salicylate, to give 30 grains of the alkali, until the urine reacts alkaline, and then diminish the dose, but keep the urine alkaline.

In parenchymatous myocarditis occurring in diphtheria, the onset is usually late, but if it does occur while the process is active in the throat, the antitoxin should be pushed vigorously, for though the toxin combined with the heart muscle cannot be ousted, the combination of more can be prevented.

In typhoid its appearance does not contraindicate the use of the cold bath, as long as the reaction remains good, and in pneumonia the cold air is of double value when myocarditis ensues.

2. He does not think we have any drug that can affect the progress of the cardiac condition itself. One cannot be entirely indifferent, however, to the constant reference of the books to the use of potassium iodide in such conditions. He finds, however, that the references are almost invariably in very general terms, with no definite instructions as to how it is to be used or what the rationale of its usage is.

Potassium iodide belongs to the class of drugs known as alteratives, and that term covers about all we know of their action—that is, that they produce changes. There are no more real therapeutic agents than this class of drugs, as witness mercury and potassium iodide in syphilis. The fact that

new tissue of syphilitic origin fairly melts away under the action of potassium iodide has led to its use in all kinds of conditions in which replacement of tissue new or old is formed, but with dubious results. That this drug may not yet prove an active agent in controlling inflammatory and degenerative changes in other conditions than syphilis, one cannot predict.

3. Before considering drugs, what local measures of relief may be afforded?

Local measures have been used (1) to modify the progress of the inflammation, and (2) to relieve such symptoms as palpitation, precordial distress, and pain. These measures consist in the application of cold, heat, or counter-irritants. The application preferred is the ice-bag over the precordium. This is indicated in cases of pain or distress and certainly gives relief to the patient.

Palpitation is also relieved, and it is maintained that the slower pulse, better heart-beat, and improved regularity claimed for this method can be demonstrated experimentally in the healthy subject. The ice-bag may be put on at intervals of several hours for an hour at a time or can be kept on continuously.

Care must be taken that the bag does not become a source of annoyance from its displacement and the effort demanded to keep it in place, as the fatigue ensuing would more than neutralize any benefit that might accrue from it. There is constant danger that these things may degenerate into senseless routine, and it is one of the commonest experiences to find that neither nurse nor patient makes any effort to keep the bag where it belongs.

Meara believes that the effects produced come through the reflexes, starting in the skin and impinging on the viscus innervated from the same segment in the cord as the skin area concerned, so that an ice-bag resting on the abdomen can scarcely have the effect on the heart to be anticipated from one resting on the precordium.

To some patients who stand cold badly, the application of heat over the heart in the shape of fomentations or poultices may allay pain and distress. It is not a usual procedure.

It has been the practice from time to time to use counter-irritants over the heart in acute endocarditis, not merely to allay pain, but with the idea that it influenced the inflammatory processes. Blisters were commonly used. The practice is but rarely recommended in this country.

When pain cannot be relieved by local measures, or when precordial distress, anxiety, or palpitation is severe, morphine is indicated in doses of ½ to ¼ grain hypodermically.

In the first attacks of rheumatic endocarditis the above measures will suffice in the vast majority of cases to carry the patient through. The heart muscle is strong; mechanical defects have not yet had time to strain it, and our chief concern will be so to manage the convalescence as to study the cardiac reserve and spare the heart excessive demands that hasten it to a permanently crippled condition.

Sometimes, however, in the first attack, and much more frequently in recurring attacks, cardiac insufficiency intervenes, with rapid dilatation, dyspnea, cardiac distress, and occasionally, but rarely in first attacks, a dropsy.

When this condition comes on rapidly, it is accompanied by much mental as well as physical distress, and there is nothing that accomplishes so much at once as morphine. It should be given in doses of ½ to ¼ grain hypodermically. It quiets the mind, lessens the dyspnea, produces muscular relaxation, and accomplishes the maximum of rest. Sleep ensues, itself of the greatest value.

In such a condition the heart needs stimulation.

There is no drug comparable to digitalis unless it is strophanthus. Meara prefers, if the stomach has been in good shape and the condition does not threaten too urgently, the infusion of digitalis in doses of 2 to 4 drachms three or four times a day, until results are obtained.

When nine to twelve doses have been given it is wise to intermit, for such quan-

tities will be operative if any quantity will, and more may prove toxic. The omission of the drug for two to four days allows of excretion of some of the accumulation. Other official preparations may be used if fresh and reliable. For more urgent use strophanthus stands preëminent.

There is no drug that operates more rapidly than a reliable strophanthin gr. 1/120 put into the vein or into the muscle. Its effect on the pulse in increasing its amplitude may be made out in a few minutes and on the urine in two or three hours. The dose may be repeated once in the next twelve hours if needed, but further dosage is hazardous. It is better to rely on the effects of the digitalis, which should be begun at the same time as the strophanthin effect in twenty-four to forty-eight hours.

Little reliance is to be placed on the glucosides of digitalis for prompt action or for full equivalent of the action of the leaf or its official preparations.

As the heart strength is restored the drugs should be withdrawn as rapidly as possible.

In the cases of acute myocardial degeneration we may have progressive weakening, slapping sounds, thready and rapid pulse, and some evidence of dilatation, especially to the right. This weakening, if not responding to rest and the measures advised, will need the administration of digitalis.

Besides this condition, we have sudden cardiac collapse, asystole. This occurs especially often in diphtheria. So rapid may this be that death ensues before measures of relief can be obtained.

Myocardial degeneration may be marked in diphtheria, but we have reason to believe that the collapse is more often due to vasomotor paralysis than to cardiac. Such vasomotor collapse is probably the cause of most of the deaths in the myocardial cases, and it is safer to treat such cases of collapse on that theory.

In vasomotor collapse or in surgical shock, the splanchnic vessels are dilated and the patient is literally bleeding to death into his own visceral vessels. The vasomotor center might or might not respond to stimulants, but the vessels will. A rapid and marked effect, though a temporary one, is obtained by a hypodermic of adrenalin, 15 to 20 minims of 1 to 1000 in normal salt solution, the strength in which it is usually dispensed. This should be given deep into a muscle, whose wide network of vessels, Meltzer has shown, absorbs as rapidly as a vein.

#### MANAGEMENT OF THE CIRCULATORY BALANCE IN CHRONIC INTER-STITIAL NEPHRITIS.

Wells, in the American Journal of the Medical Sciences for January, 1912, says in discussing this condition that in the stage to which he refers the patient has passed through a prolonged period of great dis-There has been such respiratory distress as to prevent the patient assuming the recumbent posture, sleeping fitfully in his chair in a more or less erect and uncomfortable position. There have been a variety of uremic manifestations, such as headache, wakefulness, muscular twitchings, visual scintillations, drowsiness, mental dulness and aberrations, etc. and other hemorrhages may have occurred. Occult edema has appeared and gradually increased, with augmented distress, to the greatest tension, when, fitfully, the restraining barriers of intercellular tissue-serum attraction and areolar tissue resiliency give way, and with notable relief from the distressing symptoms, dependent dropsy is an established fact. The patient is now in a present and visible danger; the management assumes an importance, not greater, but more acute. What shall it be?

Removal of the superfluous tissue-serum is an essential first step. This is best accomplished by the use of elaterin. The method of procedure is important. During three days the diet should consist of thin gruels, cream and water soups, tea, coffee, water, and carbonated waters. The first and second days the total quantity should be about 1500 Cc. per day, during the third day the quantity should not exceed 1000 Cc., and the gruels and soups should be

taken very sparingly or omitted. night, including the night preceding the first day, there should be taken 10 grains of mercurial mass, in two freshly made pills of 5 grains each. The first following morning there should be taken an ounce of castor oil; on each of the other mornings there should be taken an efficient saline cathartic. Beginning with the fourth morning, give 1/20 grain pure elaterin every hour for three doses: later 1/10 grain every two hours, until ten or twelve very free watery movements have been secured. This may require two or three days, during which time the patient should have no solid foods, and very little liquids. Later the standard diet, modified as may be required, should be gradually resumed. The total number of liquid stools will probably be from 15 to 20, and the quantity of tissue-serum drained away from 5 to 20 pounds. The filtered serum thus evacuated should be analyzed, and the results recorded. It is usually acid, straw- or amber-colored, having a specific gravity of from 1005 to 1030, and heavily laden with chlorides. The odor is sometimes peculiarly offensive. Following the intestinal drain the flow of urine usually becomes very free: the day's secretion has reached the enormous quantity of 6000 Cc., when previously it had been scanty. The siphonage thus started ordinarily continues as a free flow until the edema has completely disappeared: nevertheless, this action should be assiduously encouraged and stimulated, for example, by the use of infusion of active digitalis leaves, theocine, external warmth, the recumbent position, etc. During the entire course the intake of liquids should be well below the output. The advantage of this method of removing dropsical liquids lies, primarily, in the fact that they are selectively excreted by the intestinal and renal cells, ordinarily the albuminous and other useful nutritive materials largely remaining behind.

In some cases, from various causes, the method thus shortly outlined is impracticable. It will then be necessary to remove the serum directly from the subcutaneous tissues, preferably by means of

Southey's tubes. The pointed stylet makes an opening through the skin mainly by spreading the tissues: the small tubes are tightly grasped by the elastic tissues, thus preventing leakage; closure promptly follows removal of the tubes, and with the employment of full antiseptic precautions infection is almost unknown. Two tubes in each leg, one inside and the other outside. inserted just above the ankle, or at any other available points, are usually sufficient. Rubber tubes of the smallest caliber, as soft as rubber catheters, should be attached to the ferruled ends of the silver tubes and tied with ligatures, the ends of which may be used in retaining the tubes in place. In this manner the surface is kept dry, the draining tissue-serum being conveyed to suitable receptacles, thereby adding to the comfort of the patient and reducing to a minimum the liability of infection. patient should assume a semirecumbent posture, preferably sitting in a chair, or lying in a specially prepared bed which insures an inclined plane for the body, with the feet in the most dependent portion. He should be made as comfortable as possible, inasmuch as much fortitude is required. The drainage should be continued until the edema has largely disappeared, and the flow reduced to an insignificant amount. Usually there may be removed in this manner from 10 to 30 pints in twenty-four hours, and from four to seven days of gradually decreasing flow will be required to complete the process. The advantages of this method lie in the directness of the attack and the certainty of results; the very obvious objection to it is that the tissueserum is drained off as a whole, including its albumin and other nutritive materials. Upon removal of the tubes a dry antiseptic powder should be used and an elastic bandage applied to the feet and legs. The feet should be kept at a higher level than the The small openings rapidly close under this management.

Removal of these large dropsical accumulations discloses an astounding degree of emaciation, although this may be anticipated with great exactitude from the moment when occult edema is detected. With complete exhaustion of the stored-up fats, and the patient's proteid tissues already heavily drawn upon, we are brought face to face with a very formidable situation, inasmuch as the continuation of this condition will lead to starvation acidosis, with all its distressing features. To meet this condition there will be required a most careful adjustment of the dietary, in the formulating of which close attention should be given to its every detail. The following may be considered as typical only, inasmuch as the individuality of the patient and his requirements must dictate the dietary:

	Grams.	Calories
Breads of all kinds, a minimum of	. 124.0	496
Oatmeal, or other cereal, a minimum of.	. 81.0	124
Rice, variously prepared, a minimum of.	. 31.0	124
Potato, variously prepared, a minimum o	f 62.0	248
Meat, fowl, or fish, lean, a minimum of.	. 31.0	124
Meat, fat, a minimum of	. 81.0	279
Eggs, a minimum of	. 96.0	884
Sugar, a minimum of	. 15.5	139
Butter, a minimum of	. 15.5	155
Cream, 15 per cent., a minimum of	. 124.0	186
Milk, 3 per cent. cream, a minimum of	. 500.00	150
Cheese, a minimum of	. 15.5	162
Total		2571

To these there may be added, or to an equitable extent substituted for a portion, all kinds of succulent vegetables and fruits, properly prepared. The table salt should be limited to somewhat less than the secretory capacity of the patient's kidneys. The same rule should apply to the liquids taken, ordinarily from 1000 to 1500 Cc. is the proper quantity, but they should not exceed the output by the kidneys and intestines.

# PARALYSIS OF THE RADIAL NERVE COMPLICATING FRACTURES OF THE HUMERUS.

BAC (Thèse de Lyon, Journal de Médecine et de Chirurgie, Oct. 10, 1911) notes that the diagnosis of radial palsy is immediately suggested by flexed position of the fingers and of the wrists and pronounced adduction of the thumb, the impossibility of extension and of supination, and anesthesia in the area of distribution. He calls attention to the fact that the surgeon should assure himself that the radial palsy is concomitant with the frac-

ture, since it has often happened that a disability long preceding injury has been attributed by the physician to the latter. He notes that in many instances these palsies are transitory, due then to a contusion or stretching of the nerve. In others they are partial, and in some they are complete and attended by the reactions of degener-The important point in his communication is from the prognostic standpoint. He quotes numerous cases showing that there is spontaneous cure after one or two years. He holds that the prognosis is relatively benign, that although spontaneous cure does not always result, it does so in the majority of cases.

#### ARTERIOVENOUS ANASTOMOSIS IN THE TREATMENT OF GANGRENE OF THE EXTREMITIES.

HALSTEAD and VAUGHAN (Surgery, Gynecology and Obstetrics, January, 1912) report that there is experimental evidence to show that in animals the circulation through the large veins of the extremities may be reversed, and that it is possible for the normal blood-pressure in the arteries to overcome the resistance of the valves of the veins.

Experimental and clinical evidence demonstrate that the anastomotic opening is not permanent, but that gradual obliteration by intimal overgrowth takes place in event of the failure of early occlusion by a thrombus.

There is not sufficient clinical evidence in the reported cases to show that the pressure of the blood in the arteries in the cases operated upon was sufficient to force the valves in the veins.

It has been shown, however, by the cases reported that early occlusion of the vessels about the anastomotic opening is the rule, and in many the opening never at any time functionated.

In the event of the arterial blood forcing the valves in close proximity to the anastomotic opening, it returns chiefly through the larger communicating veins in many if not most instances and does not traverse the capillaries.

A study of traumatic arteriovenous aneurism shows that with a normal arterial pressure it required weeks or months for the valves in the communicating vein to be overcome, as is evidenced by the gradual development of varicosities and the longdelayed pulsation in the veins remote from the seat of aneurism. Under these conditions the arterial blood supply is maintained partly through the usual collateral channels which are unobstructed. In cases of gangrene from obliterating diseases of the arteries, the collateral vessels are already In such a case immediate reoccluded. version of the circulation is imperative. This cannot be accomplished at present:

- (a) Because of the obstruction offered by
- (b) Because in many cases the circulating blood must also overcome the resistance offered by a thrombosed vein.
- (c) Because the blood returns through the nearest communicating vein and does not reach the peripheral capillaries.

The final conclusion is that there is but one indication for the application of arteriovenous anastomosis in surgery—i.e., in traumatic destruction of a principal artery, where end-to-end union of the torn vessel is impossible. In such case arteriovenous anastomosis might be attempted, and through it we might maintain a sufficient blood supply to preserve the integrity of the limb until an adequate collateral circulation was established.

## EARLY DIAGNOSIS OF ECTOPIC PREGNANCY.

Huggins (American Journal of Obstetrics, November, 1911) in a paper on this subject states that one of the most important factors in its early recognition is the careful study of the patient's history, not for a month but for a number of years previous to the development of symptoms suspicious in character. By careful inquiry a history suggesting some previous tubal infection will be found in the great majority of cases. The patient may have been pregnant soon after marriage six or eight

years before, but not since. She may and probably will give a clear history of pelvic disturbances at some time during the pastin some instances severe, in others of such mild character that they may be overlooked. A period of sterility is strong evidence in favor of previous disease of the Fallopian tubes. It is true that all patients do not give a definite history of tubal disease, but that many do was recognized and commented upon by the earliest investigators. A careful study of the menstrual history is equally important. The exact date of its appearance, its duration, and character of flow should be carefully investigated. the habit has been perfectly regular, any delay or irregularity in the presence of other unusual symptoms is sufficient to bring to mind the possibility of ectopic gestation.

When a woman whose menstrual period has been regular misses or goes beyond her time for menstruation, she will suspect pregnancy. If a flow from the vagina begins in a period varying from four or five days to three weeks after the regular time, continuing more or less regularly, accompanied by pains periodic in character located in the hypogastrium or on either side, extrauterine pregnancy should at once be suspected by the physician, unless some other well-defined condition is present to account for it. The vaginal hemorrhage may be dark-colored blood, coagulated at times; at others a blood-tinged leucorrhea, or in some instances bright-red. It is sometimes described by the patient as being different from the normal menstrual flow. and is therefore atypical. This hemorrhage is doubtless due to a partial separation of the ovum from its cyst wall, or to the separation of the decidua from the uterus.

The pains are due to the attempt of the tube to expel the ovum or escaped blood, which act as foreign bodies. There may be a number of severe attacks of pain lasting over a period of several weeks before the final rupture occurs. It is not infrequent that considerable blood escapes into the abdomen during these attacks, but not suf-

ficient to produce serious symptoms. There are undoubtedly many instances in which the ovum escapes into the abdominal cavity with but moderate hemorrhage, becomes destroyed, and the woman recovers.

In 95 per cent of the cases of ectopic pregnancy seen by the writer, the history and local symptoms have overshadowed all others, and seldom in the early weeks have the usual general signs of pregnancy been present. It is true that this does not occur in every instance. In some cases there is no history of either pain or hemorrhage or flow of any kind, the first symptom being that of sudden severe pain and collapse. Careful study of the histories in fifty-two cases which had gone on to rupture in the writer's experience, showed that in all but five there had been some irregularity of the normal flow and pain before the final rupture and collapse.

The local signs elicited by pelvic examination are not always as satisfactory as might be desired. The softening of the cervix is not so marked as in normal pregnancy; the uterus is enlarged, but not to the same degree. Unless the abdominal wall is very thick, the enlarged tube, which is extremely tender on pressure, can be readily palpated. Traction upon the cervix usually produces great pain, and that sign, if present, taken into consideration with the other symptoms above referred to, makes diagnosis doubly certain.

Few conditions of the pelvic organs produce symptoms similar to the above.

Abortion seems to be frequently suspected in the presence of the above symptoms. A careful history, and the absence of tenderness on either side of the uterus, will usually eliminate the possibility of this condition. We do not find severe pains in abortion during the first six weeks of pregnancy unless there is some complication present. Abortion, in the presence of inflammatory disease of the adnexa, with adhesions, can no doubt be misleading. Few cases of ectopic gestation occur in the presence of acute infection of the tubes.

Salpingitis or pelvic peritonitis is seldom attended by such symptoms as those de-

scribed, but in some instances it may be difficult to differentiate between the two. Careful study of the history will serve as an aid. The menstrual flow is not delayed in the presence of inflammatory lesions, but is usually earlier than in customary health. The study of the temperature chart and a careful blood count are also aids of considerable importance. An enlarged tube from ectopic pregnancy, and a tube swollen from infection with its surrounding exudate, palpated in the same position give such different sensations that it is difficult to see how this mistake can often occur.

In those cases of intrauterine pregnancy which are accompanied by hemorrhages, the absence of severe pain or colic, also the absence of pain at either side of the uterus, are important factors in the differential diagnosis. Oftentimes the pathologist can be of great assistance if he is about to determine the presence or absence of decidual cells by examination of the uterine scrapings.

Finally, in the presence of strong presumptive symptoms we can eliminate doubt by opening the cul-de-sac, and thus immediately establish a diagnosis with but little risk to the patient.

#### THE PREVENTION OF THE RECUR-RENCE OF GALL-STONES AFTER OPERATION.

KEHR (Münchener medicinische Wochenschrift, Jahrgang 58, Nr. 49) reports recurrence of gall-stones in a patient sixtyfour years of age operated upon four years previously for common-duct stone. At the time of operation the patient was already suffering from biliary cirrhosis, but in spite of this he recovered after the removal of a single stone from the retroduodenal portion of the common duct. For three and a half years after the operation the patient's health was good; then he began to suffer with loss of appetite and slight jaundice, but no pain. Later the jaundice became very marked. and operation was advised. The liver was found to be cirrhotic, the common duct greatly dilated and containing purulent bile.

and a stone the size of a hazelnut was. wedged into the retroduodenal portion of the duct. This stone was removed and sent to Professor Aschoff in Freiburg for examination. He reported that the stone was 23 mm. long by 14 mm. wide, dry, darkbrown, and showed numerous fissures which extended into the center of the stone. On account of the macroscopic appearance. the absence of definite strata, and the peculiar consistence, it could be determined that in all probability the stone was formed in the common duct itself. The most interesting feature was that its nucleus was a piece of silk suture material which had been used in the previous operation.

The author believed that this was a true case of recurrence after drainage of the liver, for he had not removed the gallbladder, which was small, empty, and shriveled, at the first operation in order to make the operative procedure as uncomplicated as possible. He considers that a new stone had formed in the gall-bladder, had then passed into the common duct and there increased in size; but this supposition was incorrect, as shown by the investigation, because the stone was found to have been formed in the common duct itself around the knot of a silk ligature. This observation shows that before one speaks of a true recurrence the stone should be carefully studied, especially with reference to its nucleus. Since this experience the author no longer uses silk for suturing an incision of the common duct, but employs the finest catgut instead.

## OPERATIVE MOBILIZATION OF THE KNEE-JOINT BY THE INTERPOSITION OF AMNION

Schmerz (Beiträge zur Klinische Chirurgie, Bd. 76, H. 2) states that of the pathological changes in the knee-joint which most frequently lead to ankylosis are internal injuries such as inveterate luxations and fracture; fibrinous and purulent arthritis of different kinds, especially gonorrheal arthritis; chronic inflammations with very little or no exudate, such as chronic

arthritis deformans and dry ulcerative and adhesive arthritis: and the various forms of tubercular arthritis. The conditions which must be fulfilled in operative mobilization of the knee-joint and restoration of its function are careful selection of the material, in which important factors are the intelligence, good-will, and industry of the patient; the most careful possible opening of the joint upon an anatomical basis; the greatest possible care of the lateral ligaments and the tendinous extremities of the thigh muscles which are inserted around the joint; extreme regard for the extension apparatus as represented by the quadriceps tendon and the ligamentum patellæ, and the use of methods which will guarantee the restitution of these structures ad integrum: radical removal of all diseased tissue from the interior of the joint and the capsule: restoration of the joint constituents in such manner as to maintain in the best possible way the anatomical conditions, and so as to provide against a loose joint; covering over both joint ends with the amnion of the fetus and the fixation of this membrane by means of sutures to the periosteum. Careful reposition of the joint part so as to constitute a good articulation; careful closure of the wound with drainage, bandage, and such position and extension as will best accomplish the desired object. Rational after-treatment, consisting of careful movement as early as possible, first passive, then active; resistance gymnastics; gymnastic exercises without apparatus; massage; hot-air applications and faradization.

The author reports the case of a twenty-year-old girl, operated upon on account of gonorrheic ankylosis of the knee, with the result that she was able to walk, kneel, and rise without help. More than three months after the operation she reported that she was able to take long walks without a cane and also to climb hills. The muscles which were atrophic before operation had become very much strengthened. The only unfavorable symptom was that after a day's going about the foot became somewhat swollen.

## THE TREATMENT OF RUPTURED EXTRAUTERINE PREGNANCY.

SCHULTZE (Deutsche Zeitschrift für Chirurgie, Bd. 112, H. 1-3) states that there have occurred in the clinic of Martens in the Bethany Hospital in Berlin since May 1, 1903, 54 cases of ruptured extrauterine pregnancy, with seven deaths. Of the seven fatal cases, two should be excluded because one was dead upon admission, and the other died just as it was brought into the operating-room. Clinically the cases could be divided into those in which there was free hemorrhage into the abdomen, 32 cases with five deaths; encapsulated hemorrhage which had not extended into the pouch of Douglas, five cases with no deaths; those in which there was retrouterine hematocele, 14 cases with no deaths; and one case in which there was ovarian cyst combined with tubal pregnancy, without death.

The diagnosis of free hemorrhage into the abdomen offers difficulty in only a few cases. The most favorable prognosis is offered when such cases are operated upon as soon as the diagnosis has been made. If operation is delayed, a second hemorrhage may occur with further collapse, and the resistance of the patient be so lowered that operation may come too late.

As regards the question whether operation shall be done per vaginam or by laparotomy, there is no doubt that a great number of cases of free bleeding can be operated upon by the former as well as by the latter method. Orthmann considers the vaginal route the best, because in this way help can be given most quickly and most certainly and with the least danger. Dührssen says that the indications for the vaginal route depend first upon the technique of the operator, and secondly upon the technique of the assistant. If both these conditions are satisfactorily fulfilled, then the vaginal route should be chosen only when there is insufficient time for preparation of the pa-The author considers that for the vaginal operation the pubic hairs should be shaved and the rectum should be emptied. Even though time permitted this preparation to be carried out the process of empty-

ing the rectum is very likely to excite peristalsis and lead to further hemorrhage. Usually there is not time for such preparation. In the one case in which the author used the vaginal route fecal matter was pressed out of the anus by the speculum during operation, and the patient became infected, with a resulting abscess. In the experience of some operators the rectum has been perforated by the vaginal operation. The occurrence of postoperative ventral hernia is not infrequent following the abdominal operation. For several years the author frequently drained the abdomen, but at present he does not drain. If one is careful in suturing the abdominal wound and uses the Pfannensteil incision, not only is a fine scar obtained, but with careful asepsis one also absolutely avoids hernia. The Pfannensteil incision leaves a scar which is no more objectionable to the patient than the vaginal scar. The length of time which is necessary for the patient to remain in the hospital is practically the same with the two operative methods.

The author's method of operation consists in the Pfannensteil incision, extirpation of the diseased tube, if possible with preservation of the ovary, and careful cleansing of the peritoneum. Then the peritoneal cavity is irrigated with saline solution, and there is no hesitation about carrying the gloved hand into various parts of the abdomen in order to remove any blood which may be present. If blood-clots are allowed to remain in the abdomen, they afford breeding places for infectious bacteria, which in turn leads to adhesions between the different organs; also the process of resorption of the blood may cause sufficient autointoxication to result in paralysis of the intestine. Considering further the author's cases. 13 were sent in to the hospital with a definite diagnosis; in five of these the diagnosis was correct. In one the diagnosis was perityphlitis, in three peritonitis, in one influenza, in one peritonitis, in one appendicitis, in one catarrh of the stomach, and in one intestinal obstruction.

The diagnosis of the second group of cases, in which there is encapsulated hemor-

rhage which has not yet extended into the retrouterine pouch, is not so easy. These cases are always several days to several weeks old. The history is usually, apart from suppressed menses, not so characteristic as in free bleeding. The diagnosis in the five cases here reported was not difficult, and was established in three cases by the casting off of the decidua and in one case by operation, and in the fifth case, in which it was suspected, the diagnosis was finally established by operation three and a half months after the mass was first discovered. In these cases expectant treatment can be indulged in for a longer time than in other varieties. However, if resorption is delayed too long, if the mass increases in size or fever supervenes, operation should not be delayed. Of the 14 cases of retrouterine hematocele, only four were sick eight days or less before they were brought to the hospital, while the remaining 10 were sick from two to seven weeks. In many cases, because of the absence of a characteristic history and because the only physical finding was a mass in Douglas's pouch, diagnosis, in the absence of puncture, is impossible, as the condition might be either hemorrhage from extrauterine pregnancy, abscess from the genital organs or the appendix, or a real tumor of the adnexa. Of these cases six were treated expectantly, seven by vaginal incisions, and one by laparotomy, because after the vaginal puncture there occurred alarming peritoneal phenomena with collapse. Hematocele is frequently accompanied by fever, but this fever is no contraindication for laparotomy with closure of the abdomen. In all these cases, although the abdomen is closed without drainage, this should be established through the vagina. In this way the convalescence can be very much shortened.

The author's conclusions are that every ruptured extrauterine pregnancy should be operated on at once, the operation of choice being laparotomy. Encapsulated hemorrhage, which has not yet extended into Douglas's pouch, should not be too long treated expectantly, because, by the expectant plan, the convalescence is un-

necessarily prolonged. If a retrouterine hematocele is not resorbed within two or three weeks, laparotomy should be performed. The diagnosis in these cases must be made by a puncture of Douglas's pouch, and, in order to avoid infection, laparotomy is best carried out immediately on conclusion of the puncture. The danger of operation is very small.

#### A NEW OPERATION IN THE GASTRIC CRISES OF TABES.

EXNER (Deutsche Zeitschrift für Chirurgie, Bd. 111, H. 4-6), of Hochenegg's clinic, states that the adoption of a new method of operation for the relief of the gastric crises of tabes was suggested to him by a case in which the posterior roots of the last three thoracic nerves were resected according to the method of Förster, with the result that the patient was relieved of the attacks of pain, but there was a continuance of the vomiting. This fact appeared to him so surprising that it led him to search for an explanation. It is well known that vomiting, so far as it depends merely upon the motility of the stomach, is excited through the vagus nerve. It has been shown by experiments that vomiting can without doubt be produced through the activity of the vagus. The case in question shows that by resection of the dorsal roots the painful part of the vomiting can be eliminated without any effect upon the vomiting itself. The author was led to believe that in at least a number of cases disease of the vagus itself or of its center is responsible for the vomiting in gastric crises.

If we accept this theory, it may be presumed that the pain which is excited by the strong contraction of the stomach is precipitated by way of the posterior roots. If this hypothesis applies even to only a portion of cases of gastric crises, then our operative treatment of this condition must be modified. Our problem, then, would be not to cut the posterior roots through which the pain is conveyed, but to eliminate the primary lesion of the vagus or its center

so as to avert the vomiting, in the expectation that the pain excited by the vomiting would be prevented without operation upon This hypothesis finds the dorsal roots. some support in the pathological anatomy of tabes, for we know that, in a large number of cases, affections of the vagus are observed; but it does not explain why it is that not only the pain but also the vomiting in tabetics is relieved in some cases by section of the roots, though we must take into account that the nerve distribution in the region of the thorax and abdomen is not yet fully understood, nor do we know the part which is played by individual variations in nerve distribution.

It must be considered that possibly through cutting the vagi the reflex arc, in which both the vagus and the posterior roots are concerned, is broken. For the purpose under consideration the subdiaphragmatic section of the vagi is all that is required. The question is whether this can be safely carried out upon the human being. There is evidence from numerous experiments upon animals that the vagi can be sectioned in the region of the cardiac end of the stomach without danger. It has also been shown by Völker, by the case of gastric carcinoma upon which he operated, and in which both vagi were cut in the region of the cardia, also by a case in Hochenegg's clinic in which the vagus on one side was cut, that this operation can be done on man without serious disturbance.

Physiological studies of the relation between the vagus and the stomach show that section of the vagi tends to produce an atony of the stomach through diminution in peristalsis; also that reflex spasm of the pylorus is apt to be excited because of increased secretion of hydrochloric acid. In view of these conditions the plan of operation devised by the author consists in sectioning both vagi at the cardia, and, in order to avert spasm of the pylorus, the carrying of a drainage tube through the pylorus into the duodenum. This operation the author has carried out in two cases. The first was operated upon March 1, 1911.

The last news was received from him in June, 1911, up to which time he was entirely free from either pain or vomiting. The second case was operated upon April 4, 1911. There was relief from the vomiting, but five days after the operation the tube became displaced from the pylorus and gastric atony developed. By the 13th the patient was complaining of pain similar to that he suffered before the operation. On the next day the tube was replaced in the pylorus, but the food which the patient took was continually emptied through the tube so that marked inanition developed, and, in spite of nutrient enemata, the patient died on the 25th of April. Microscopic examination of the resected portions of the vagi showed degeneration in both cases.

The author states that, although the number of his observations is small, he thinks further therapeutic researches in this direction should be made. This operation might first be carried out, and, if the pain is not relieved thereby, it could be followed by resection of the roots.

## PRACTICAL POINTS IN THE SURGICAL TREATMENT OF EXOPHTHAL-MIC GOITRE.

OCHSNER (American Journal of Surgery, January, 1912) believes that surgical treatment should be employed in every case which does not recover permanently upon treatment with rest, hygiene, diet, and the use of a few harmless remedies; providing the patient is not suffering from temporary exacerbation of the hyperthyroidism, and, second, that the condition has not existed sufficiently long to leave the circulation and the nervous system of the patient in an absolutely hopeless condition. He believes that drainage is an important means of preventing possible postoperative hyperthyroidism. Unnecessary trauma should be most carefully avoided, the greatest care and gentleness being employed. He advocates as an anesthetic morphine-atropine half an hour before operation and ether by the drop method, the table being elevated. Immediately after the operation the patient is supplied with an abundance of liquid in the form of hot water taken by the mouth, or normal salt solution taken by enema; or if neither of these methods can be applied, by injecting normal salt solution into the tissues beneath the breast. It is extremely important to direct the patient's life after operation so that overwork, excitement, alcohol, tobacco, tea, coffee, business and social worries are absolutely avoided. The diet should largely be composed of milk, cooked vegetables and fruits, favorable hygienic surroundings, and absence of conditions which might cause nervous excitement. Attention is called to the fact that youthful patients usually recover without operation with physical, mental, emotional rest, diet of and cooked vegetables and fruits, and an absence of conditions which might cause nervous excitement.

#### THE INCISION FOR LUMBAR EX-POSURE OF THE KIDNEY.

DR. WILLIAM J. MAYO (Annals of Surgery, January, 1912) notes that the twelfth rib is the chief obstacle to proper exposure of the kidney; that in cutting this rib far back the pleura is not infrequently injured. In 203 lumbar incisions it was found necessary to cut the twelfth rib in 51 cases, and in 13 of these the pleura was accidentally opened, with no further complication or accident of any kind, the lung not collapsing even when the rent in the pleura was so large that it could be seen easily when it advanced in the act of respiration. he attributes to the fact that the patients were lying nearly flat on the abdomen, with moderate elevation of the lungs, this position serving to fix the chest so that if the pleura be opened at the extreme lower part collapse of the lung does not often occur. The pleural cavity was not infected in any of the cases, since the opening was immediately closed by catgut suture, which took in the margin of the diaphragm, the cut pleural margins, and the posterior muscles.

In a number of cases during the past two years, while exposing the posterior half of the twelfth rib for the purpose of division, the writer observed that as soon as the muscular and fibrous attachments, especially the quadratus lumborum and the lateral arcuate ligament, which binds the twelfth rib to the transverse process of the first lumbar vertebra, were divided the necessity for rib division disappeared. By putting a retractor under the angle of the twelfth rib, the upper margin of the incision, including the rib, was so mobilized that exposure of the kidney and especially of the kidney pedicle was quickly accom-The pleura was easily pushed plished. upward and not opened. In two of the cases, when the costal margin could not be sufficiently mobilized, the twelfth rib was broken with a lateral twist and pull of the hand, causing an incomplete fracture within its periosteal and muscular coverings near the neck, and in one very obese patient the rib was cut.

In some cases the twelfth rib is absent or rudimentary, but this is quite immaterial so far as the advantage to be gained from the high posterior cut is concerned. The incision is made as follows:

Beginning at a point two to two and a half inches lateral to the dorsal spines near the outer margin of the erector spinamuscle, a longitudinal incision is made two to three inches in length through the skin, superficial fascia, and posterior layer of the lumbodorsal fascia (vertebral aponeurosis) which covers the erector spinæ muscle. The incision lies behind the twelfth rib from the angle, if present, nearly to the head, and reaches downward to a point onehalf inch below the angle. From this point the incision passes obliquely downward and forward along the anterior margin of the quadratus lumborum muscle to a point an inch above the crest of the ilium, and there turning runs forward parallel to the iliac crest as far as necessary.

The posterior superior lumbar triangle (Kelly) just beneath the twelfth rib is then exposed by cutting an opening through the external and internal oblique, transversalis, and latissimus dorsi muscles, exposing the transversalis fascia in its lumbar portion. This fascia is then opened freely, exposing the perirenal fat. The ilioinguinal and

iliohypogastric nerves are identified and retracted out of harm's way and the lower part of the incision completed. The twelfth rib is then cleared in its posterior portion upward and backward nearly to the articulation of the rib with the transverse process of the twelfth dorsal vertebra, and the pleura pushed upward. By retracting the erector spinæ muscle on the one hand and the costal margin on the other, a wide exposure is accomplished at the point of previous inaccessibility. As a rule the kidney can readily be drawn through the incision to the surface with but little trac-The incision is easily closed and there is little or no danger of hernia.

The incision herein described varies from the ordinary lumbar incision only in relation to the exposure above and behind the curve or angle of the posterior half of the twelfth rib.

In operating upon kidneys which are not greatly altered in size, or in which the alteration in size is due to fluid contents which can be evacuated, Mayo prefers the lumbar incision.

For those tumors of the kidney which present themselves as a distinct abdominal mass the anterior transperitoneal incision is best.

An extended search of the literature of incisions of lumbar exposure of the kidney has not been made, but the method is so efficient and sensible that it is probably one of the old good things which has been forgotten.

## THE ROUTINE USE OF SPINAL ANESTHESIA.

RICHARDS (British Medical Journal, Dec. 23, 1911), on the basis of 500 consecutive cases, contributes a paper in which it is shown that the anesthesia was unsuccessful in 12 cases because of failure to make proper penetration with the needle, and resulted in death in three cases. The first fatal case was a man of ninety, with enlarged prostate; the second a man of forty-five, with a suprapubic fistula; the third a man who suffered from crushed leg. In all three cases the lesions found post mor-

tem were enough to account for death aside from the anesthetic used.

As to the nature of the operations, there were 177 herniotomies and 102 operations on the bladder, of which 8 were prostatectonies; most of the remainder were lithotrities and a variety of procedures involving the pelvic region and the lower extremities. The author considers the technique very simple and says that it requires no special skill. All the anesthetizing solutions can easily be procured sterilized in glass bulbs or ampoules. It is a matter of indifference through which lumbar space the injection is made, so it is best to choose the one which seems easiest. It is easier to go just to one side of the middle line to avoid the supraspinous ligaments, and it should be an absolute rule not to inject the anesthetizing solution except while cerebrospinal fluid is actually dripping from the needle. Faint staining of this fluid with blood does not matter. The dripping of pure blood means the needle is in the posterior spinal venous plexus. Drawing spinal fluid into the syringe to mix with the solution gives additional security that the needle is rightly placed, but has no other advantage, and the rate of injection seems to make no difference in the anesthesia produced. A fairly common blunder is to disconnect the needle from the syringe before withdrawing it: this allows some of the injection to escape. The puncture needs no dressing. The syringe and needles must be sterilized by boiling in water and not in soda solution, as even a trace of alkali decomposes the solution.

Aside from the failures in administration (12 attributed to the fact that the needle did not reach the proper point), there were complete anesthetic failures in 38 cases, although the injection was apparently successful. Some cannot be explained. Some were due to improperly prepared solutions. There were partial failures in 18 cases. In a fair number of cases some depression followed the onset of anesthesia. The patient yawns, complains of feeling sick or giddy, and very commonly asks for a

drink of water. In a few this is marked enough to require brandy or strychnine. This stage only lasts for a few minutes, and then the patient settles down into a condition of mental and bodily comfort, which lasts till the operation is over.

Altogether there were 16 cases of vomiting, seven of nausea, and five of faintness sufficiently marked to be noted. patients had not had a preliminary purge their bowels were often opened on the table simply from relaxation of the sphinc-In over 80 per cent of cases there were no after symptoms of importance. The commonest complaint was of pain in the head or back; in 54 cases this lasted for two days, and in 27 for three or more days, and was in some instances severe, so that the proportion of serious backache and headache was considerable. These symptoms occur in the same degree in nearly 40 per cent. In three severe cases lasting relief was produced in a few minutes by lumbar puncture.

The solutions used included novocaine. stovaine, tropacocaine, stovaine-glucose, and stovaine-adrenalin. Richards believes that spinal analgesia looked at broadly is no better than chloroform. It is, however, quite simple for the surgeon working single-handed to produce anesthesia by the spinal method and then operate at ease, with an occasional question or glance at the patient's face. The use of stovaine reaches a fair level of efficiency in inexperienced hands, and its dangers are negligible as compared to those which are experienced by a patient in the hands of a confident and inexperienced chloroformist, or to those which are present when chloroform is given fitfully by the operator or by a layman. Another advantage of stovaine in the case of patients of poor vitality is that, instead of preliminary purging and fasting, and subsequent nausea, the patients can be fed at any time up to, during, and after the operation.

The muscular relaxation obtained with stovaine is more marked than with deep chloroform anesthesia. The sphincter ani becomes so flaccid that motions are often passed on the table, unless the rectum has been previously emptied. Anal operations are rendered much easier, and the sphincter requires scarcely any stretching. In the same way a bladder which is contracted and irritable often gives rise to a good deal of trouble and delay under chloroform, the chloroform having to be pushed before the bladder can be adequately filled. The abdominal muscles harden over it, and it is not easy to tell if the resistance to distention is an active or passive one. With stovaine a bladder of this kind dilates at once to its maximum size under quite a low pressure.

For setting fractures the difference between the two is less, but is still in favor of stovaine.

When a large number of cases have to be dealt with, spinal anesthesia saves a good deal of time, not only in administration, but also because, if the list is finished unexpectedly early, other waiting cases can be added to it without preparation. If there is much work or many emergency cases, it sometimes happens that minor cases, such as hernias or hydroceles, are prepared two or even three days in succession and left over for want of time. This is very trying for the patients, and can be avoided by using stovaine.

Its disadvantages are considerable. the first place, it is not absolutely trust-Under the conditions described above there were over 10 per cent of partial or complete failures, and if it is necessary to have a chloroformist in waiting in case the stovaine does not work, its chief advantage for general use is gone. Possibly this estimate is too pessimistic, and when no anesthetist is available, it is at any rate 9 to 1 on stovaine saving the situation. And where two men are available it is better to have an assistant, with a 1-in-10 chance of his ending up as an anesthetist, than to devote him to that duty from the start.

Again, the anesthesia fails where it is necessary, as in abdominal work, to extend the operation higher than was anticipated, but in the class of cases which compose this series this question does not arise.

The dosage cannot easily be varied in the course of an operation; it can be adapted beforehand to the patient's age or size, but not to his idiosyncrasy. In order to reach the necessary level and full degree of anesthesia, a dose must be given which will produce an effect lasting about an hour, even if the operation is going to be over in ten minutes. As a matter of fact, increased duration of the anesthesia does not seem to involve any increased tax on the patient's strength. The patients fail, if they fail at all, at the beginning of the anesthesia, and apart from loss of blood improve toward the end. Of course, an overdose of chloroform can be checked by stopping its administration, while an overdose of stovaine goes inevitably on. actually the risk of an overdose is probably less with stovaine than with chloroform; one is dealing with an exact quantity of a pure drug, whereas with chloroform given on a mask the amount which enters the patient's system bears no constant relation to the quantity dropped from the bottle, and can only be roughly guessed at from the effects it produces. The rate of administration, which is so important with chloroform, also plays no part in spinal anesthesia; so that, though the original administration admits of no adaptation afterwards, the state of the patient is the only factor not accurately known and controlled. Giving chloroform is an art; giving stovaine is a scientific experiment.

To sum up, it is clear that spinal anesthesia, owing to its limited field, can never replace chloroform. If we are to be limited to one method, that must, of course, be general anesthesia. But in the ground common to both, there is not a vast difference between the two methods in ease, safety, and effectiveness, if these are taken together over a large number of cases. What there is, is slightly in favor of general anesthesia. Yet in a number of cases spinal anesthesia offers advantages which cannot be got in any other way, and its apparatus and technique are so simple that

it is worth any surgeon's while to use it whenever there is anything definite to be gained by it. In the large number of cases where there is nothing to choose between the methods, the use of stovaine becomes a matter of taste and convenience.

## TREATMENT OF NOMA WITH SALVARSAN.

NICOLL (Archives of Pediatrics, November, 1911) states that during the spring and early summer of the present year there occurred an unusually large number of fatal cases of noma in the city of New York.

At the Scarlet Fever Hospital of the Department of Health there were 11 cases and 9 deaths. So much confusion exists in the nomenclature of the various ulcerative conditions about the mouth, especially in children, that it would seem expedient to arrive at some understanding as to what pathologic condition may properly be termed noma. Thus, small ulcerations occur on the inner surface of the cheek from which smears show the presence, often in great numbers, of the characteristic fusiform bacilli and spirochætæ, but which, nevertheless, readily yield to the application of caustics or milder local remedies. Other cases, not to be differentiated bacteriologically from the latter, do not yield to treatment, the ulceromembranous process extending with startling rapidity to the gums and then to the neighboring alveolar process of the jaw. Again, marginal ulcerations about the teeth, together with a spongy condition of the gums, yield similar bacteriologic findings, but in otherwise healthy children do well under treatment by local applications.

The so-called Vincent's angina, in spite of very widely extended lesions, usually produces but few general symptoms, and, after a somewhat tedious local treatment, runs a favorable course without extensive loss of tissue.

For the purpose of these observations, the term noma is to be understood as designating a rapidly-spreading gangrenous process, beginning usually on the mucous membrane of the cheek and gums and involving all surrounding tissues, including bone, showing little tendency to self-limitation, and from which fusiform bacilli and spirochætæ may be obtained in great numbers in the smears.

Observations of this disease, extending over many years, especially at the New York Foundling Hospital, together with the study of most of the 11 cases referred to above, justify the writer in arriving at the following general conclusions:

The disease is essentially one of contagious disease hospitals and institutions for young children, but few typical cases having been reported from other sources.

It is very largely confined to children under five years of age.

It attacks almost wholly those suffering from marked malnutrition, and whose resistance has been lowered as a result of previous disease.

Measles has long been regarded as one of the predisposing causes. In the 11 cases mentioned, four had an antecedent attack of measles during their convalescence from scarlet fever.

During the occurrence of an epidemic of noma a large number of minor ulcerative or ulceromembranous conditions are found about the mouth and gums in otherwise healthy children, showing the same organisms as those found in true noma, but showing little tendency to spread.

In the epidemic at the Scarlet Fever Hospital there was no positive evidence of direct contagion, the cases being scattered over five floors of the building.

Occurring, as it does, in patients in a low state of nutrition, the disease shows little tendency either to spontaneous recovery or to yield to local treatment, or even be influenced by radical surgical measures—curetting and removal of diseased tissues. Occasionally a sequestrum of dead bone is formed, sharply marked off by healthy tissue, and spontaneous healing occurs. In the 11 cases mentioned, one took this course—that which occurred in a patient in previously fair general health. In another the same process was seen after treatment by

salvarsan. The other nine died after treatment which varied from the application of strong caustics, and frequent cleansing of the parts, to removal, under an anesthetic, of all the visible diseased tissue, including bone. It cannot be said that radical measures had any apparent effect on the progress of the disease—indeed, in some cases they seemed to act adversely.

In conclusion, it would seem advisable, even in the absence of positive evidence that spirochætæ are the specific organisms of noma, to make use of salvarsan in every case which does not immediately yield to local treatment, for it cannot be denied that other remedies have had little or no effect in controlling this horrible disease, and the use of salvarsan is at least logical.

## JEJUNAL AND GASTROJEJUNAL ULCERS.

MAYO-ROBSON (British Medical Journal. Jan. 6, 1912), after observing that he believes that this disease occurs much more frequently as a sequel of gastroenterostomy than the profession is quite willing to acknowledge, states that his own operative experience extends to seven cases, all of which have followed operations by surgeons whose technique is beyond reproach. The cause of a jejunal ulcer seems to be an excessive acidity of the gastric juice, from which it is argued that great care should be exercised after the operation of gastrojejunostomy in dieting patients, since hyperchlorhydria and sepsis combine to produce ulcers. It is further urged that absorbable material should only be used for the marginal suture.

The symptoms of gastrojejunal ulcer are quite similar to those of a gastric or duodenal lesion. There is hunger pain, relieved by eating and by alkalies. The pain often occurs to the left of the umbilicus, and is associated with marked tenderness and rigidity of the left rectus. Diagnosis is made fairly certain by blood; but if with all these symptoms a swollen and tender loop of bowel can be felt in the region of the anastomosis, or below and to the left of the umbilicus, there can be no further

doubt as to the nature of the disease. In regard to treatment, gastroenterostomy should not be performed unless the mechanical indications for the operation are clearly demonstrable, nor should the medical aspect of the case be neglected after the operation. If a jejunal or gastrojejunal ulcer has been diagnosed and does not yield to medical treatment, section must be made so that the jejunum can be examined at or near the point of anastomosis.

If the ulceration is at the gastrojejunal anastomosis or in the jejunum, and the original ulcer at the pylorus or in the duodenum has healed, the jejunum may be detached from the stomach, the ulcerated area excised, and the openings in the stomach and jejunum closed.

If the pyloric or duodenal ulcer, in healing, has led to stenosis, an anastomotic opening cannot be spared, and either a new site for the gastroenterostomy must be selected on the posterior wall of the stomach, or an anterior gastroenterostomy after Roux's method may have to be done after closing the original opening.

If the ulceration is jejunal, and the area involved extensive, the diseased part of the jejunum may have to be excised, and according to the healthy condition or otherwise of the duodenum and pylorus, the healthy jejunum may be united end to end and the stomach opening closed, or a new gastroenterostomy may be performed at a fresh site.

Should the jejunal ulcer be distinct, and the margin of the anastomotic opening be found healthy, it may be advisable to excise the ulcer and to repair the bowel without excising the jejunum more extensively, and without interfering with the anastomotic opening.

Should the patient be profoundly ill and unable to bear a prolonged operation, a loop of jejunum some inches below the disease may be brought to the surface, and the operation of jejunostomy performed. Through a tube introduced into the jejunum the patient can be fed, and the ulcerated area, whether jejunal, duodenal, or gastric, can be put at complete rest until

healing is effected, when the artificial opening can be allowed to close.

The author states that he feels sure that this operation of jejunostomy has not received the attention it merits, as in extreme cases he has found it most safe and useful. He has employed it in hematemesis where the bleeding point could not be found, in chronic ulceration with great thickening, as in plastic linitis, and in chronic perforation, where the parts were hopelessly matted, and the patient was unfit to bear a prolonged operation.

But the operation of jejunostomy may be found useful in all conditions where it is necessary to give the stomach complete rest for a time, whether the disease be in the stomach or duodenum, and he believes that in many cases of ulcer near the cardiac end of the stomach, or along the lesser curvature, as also in some ulcers of the duodenum that have failed to yield to medical treatment, the operation of jejunostomy, if there is no pyloric stenosis, will come to be the operation of choice, as by its means the patient can be well fed for months without a particle of food being allowed in the stomach, thus giving the ulcer, whatever site it may occupy, absolute rest and freedom from irritation. After a period, when healing of the ulcer or ulcers has resulted, the small tube can be left out, and the minute opening will voluntarily.

The writer states that if he were speaking only from theory he should hesitate to advance these opinions, but an extensive practical experience both of gastrojejunostomy and of jejunostomy enables him to speak with confidence in stating his views.

The operation he has performed consists in taking a loop of the jejunum well beyond its origin, just sufficiently long to reach the surface without tension. A small incision is then made into the top of the loop large enough to admit a No. 12 Jacquet catheter, which is inserted and passed for fully three inches down the distal arm of the loop. This is fixed to the margin of the incision in the gut by a silk or thread suture, and the entrance of the tube into

the bowel is further secured by two pursestring sutures one over the other. The top of the loop is fixed to the parietal peritoneum and posterior aponeurosis by two stitches and the wound closed around the tube. The patient can then be fed at once with egg, milk, and a little brandy. The whole operation can be done in from ten to fifteen minutes, and with no shock and very little visceral exposure.

As a further precaution, the loop may be short-circuited, but this is not absolutely necessary, and, should the patient be seriously ill, the short-circuiting is undesirable.

For the operation to be a success the bowel must be placed so that it will serve two purposes: (1) To permit the passage onward of the bile and pancreatic fluid poured into the intestine above the artificial fistula; and (2) to allow of food being introduced into the fistula without fear of regurgitation either of the food or of the intestinal contents.

The feeding is done by means of a funnel and tube that will slip over the catheter, and it can be repeated every four hours, or more or less frequently, according to the requirements of the case.

The operation will be found useful in the following conditions:

- 1. Wide-spread cancer of the stomach too advanced for gastrectomy and too extensive for gastrostomy. By securing complete rest to the stomach, it stops hemorrhage, relieves pain, diminishes the size of the tumor, and prolongs life very considerably.
- 2. In general cicatricial contraction of the stomach, due to the swallowing of caustic fluids, in which the stomach has been so far damaged that it no longer performs its functions or even allows of the passage onward of food.
- 3. In chronic ulcer of the stomach giving rise to hemorrhage, pain, or vomiting, and to malnutrition; and where the patient is too ill to bear partial gastrectomy, which can, however, be subsequently done if thought needful after the patient's condition has been restored by adequate feeding.
  - 4. In some cases of chronic duodenal ul-

cer, associated with hyperchlorhydria, in which there may be a fear of jejunal ulcer subsequently developing if gastroenterostomy be performed.

- 5. In certain cases of duodenal ulcer in very stout subjects in which it is extremely difficult to perform a posterior gastroenterostomy, and in which violent hemorrhage has only recently occurred and may be again excited by dragging on the stomach.
- 6. In jejunal or gastrojejunal ulcer where the patient is thought to be too ill to bear one of the extensive operations previously mentioned; or where, the disease being slight, it is thought that the complete rest to the stomach and upper jejunum that can be given by a jejunostomy will at the same time relieve the hyperchlorhydria and cure the ulcer. Neumann has, in fact, suggested the operation for hyperchlorhydria alone.
- 7. In recurring hematemesis failing to yield to ordinary treatment, and where on exploration no ulcer or other removable cause can be discovered.
- 8. In persistent vomiting threatening life, as in the severe and sometimes fatal vomiting of pregnancy, when no food whatever can be retained in the stomach.

## OPERATIVE TREATMENT OF FRACTURES.

BARTLETT (American Journal of Surgery, January, 1912) reports that of 80 cases treated, it has been possible to secure the results in 53 instances. In summing up these results we find that bony union is known to have occurred 46 times out of the 53; that non-union resulted five times; three patients died (one of these died of heart failure; the bony union had already resulted).

As a result of the experience gained in the 80 cases summed up in this paper, Bartlett has the most unqualified enthusiasm for the open treatment of fractures in properly selected cases. Too great emphasis, however, cannot be laid on the importance of the proper selection of cases, as shown throughout this discussion. The statistics given demonstrate exactly what

has been accomplished. The results of the next 80 cases will be much better, as experience plays a wonderful rôle in this class of work.

The number of plates in which secondary removal was necessitated inevitably leads to the conclusion that smaller and lighter plates must be used if a tissue tolerance to them is to be cultivated. However, removal of a plate is a matter of comparatively slight significance when restoration of anatomical and functional perfection is considered. Removal of wires, nails, or pins is not needful where aseptic healing had been effected.

Nothing short of absolutely perfect approximation justifies an open operation for fracture. By this is meant a union so exact that no fracture line can be seen by spectators a few feet away from the field.

An ideal result is possible even when Lane's plates are used in the presence of pus, as shown by one case.

The mortality here shown of three in eighty can be still further reduced by more discrimination in the material chosen. The author lost one alcoholic from pneumonia eight days after plating a clavicle, and a second in delirium tremens fifteen days after the same treatment of a femur; the conclusion is obvious. His third death occurred suddenly as the patient was about to be discharged, apparently cured.

His experience shows him that for practical purposes one must regard the bone plate as highly useful in fixing fragments only until external splints have been applied. He has seen screws become loose where motion inside of the cast was possible, something especially true of the femur or humerus. There can be no doubt that a better prognosis can be given for a thin than for a fleshy person so treated.

#### URETERAL GRAFTS.

CHIASSERINI (Lancet, Nov. 25, 1911), as a result of an experimental research in which sections of blood-vessels were employed to establish the continuity of the divided ureters, noticed that there is a possibility of the vessel ends between the

two ureteral ends becoming firmly united to them. The piece transplanted becomes shortened a few days after the operation, so as to draw the two ureteral ends nearer together. The graft becomes thicker and hard, while the lumen is nearly obliterated. The stenosis causes a stoppage in the flow of the urine with consecutive dilatation of the canal of the ureter and hydronephrosis.

The author holds it as certain that vascular grafts cannot be used to replace a segment of the ureter.

### REVIEWS.

DIFFERENTIAL DIAGNOSIS. By Richard C. Cabot, M.D. Second Edition, Revised. Illustrated. The W. B. Saunders Company, Philadelphia, 1912. Cloth, \$5.50.

As many of our readers know, this method of presenting the subject of diagnosis, by the description of a large number of more or less typical cases, is practically original with Dr. Cabot so far as the compilation of a volume dealing with clinical medicine is concerned, although there have been books equally good which have dealt with symptomatology and diagnosis in such a way as to lead from the symptoms of the patient to the name of the disease. After an introductory chapter of about twenty pages, the author deals with pain and its diagnostic value; then with headache, lumbar pain, general abdominal pain, epigastric pain, pain of the right and left hypochondrium, the two iliac regions, the arms, the legs, the feet. The rest of the book deals with the symptomatology of fevers, chills, coma, convulsions, vomiting, dyspnea, bloody urine, jaundice, and nervousness.

Those who have possessed themselves of the first edition know full well that the author has been successful in clearly describing the symptoms which are necessary to diagnosis. The present edition has been carefully revised, and we are told in its preface that additional symptoms will be dealt with in a second volume along the same lines. Occasionally the author resorts to diagrams to illustrate clearly the relative frequency of various diseases and various symptoms, as, for example, that showing the causes of right iliac pain.

Diagnosis based upon statistical frequency is of course unreliable, but never-

theless statistical frequency is one of the factors which must always be considered. That there are faults in this method of presenting diagnosis cannot be doubted. Thus, the importance of vomiting as a symptom is hardly represented by the diagram on page 609, at least in the sense of giving us any aid which will help us materially in reaching a conclusion. According to this diagram, by far the most frequent cause of vomiting is "gastric neurosis." The next most frequent is acute appendicitis, and next cardiac disease, when, as a matter of fact, we all know that the vast majority of cases of vomiting are due to digestive disorders which do not depend upon any of these causes. It is in this respect that the book may mislead the inexperienced, although of course it will not have this effect upon the qualified practitioner of several years' standing. same criticism holds true in regard to the description of the causes of jaundice. According to this, gall-stones are the cause of jaundice three times as commonly as catarrhal jaundice. While it is true that jaundice is, in many instances, due to organic disease, the belief on the part of the practitioner that in each case of jaundice there are three chances to one that the condition is due to gall-stones would be erroneous. Then, too, it causes one to lose sight of the fact that gall-stones usually do not cause jaundice.

The book is very copiously illustrated with plates, nearly all of which are excellent. It is valuable collateral reading for the student and interesting general reading for the practitioner, who will pick up in its different pages many useful points

in diagnostic methods. These criticisms in no way detract from the value of the volume, the success of which is already assured.

SEX HYGIENE FOR THE MALE AND WHAT TO SAY TO THE BOY. By G. Frank Lydston, M.D. Illustrated. The Riverton Press, Chicago, 1912.

The author of this book on Sex Hygiene is recognized by every one who knows him as a most vigorous and pungent writer, and therefore the expectations which are aroused on being given a book from his pen do not fail of realization when these particular pages are perused. In his introduction Dr. Lydston, as so many other writers on this subject have done, emphasizes the need of giving adequate sexual instruction to both young men and young women. As an illustration of the vigorous way in which Dr. Lydston presents his subject, we may quote the following thirteen word pictures which he paints:

"Picture 1. A certain health resort—the sink-hole into which a large part of the immorality, crime, and disease of America is dumped—there are a hundred thousand visitors annually. Of these, a large proportion go there to harvest their 'wild oats' crop. He who visits one of the government 'rale holes' can best appreciate the harvest of the 'wild oats.'

"Picture 2. A hospital. Here is a group of locomotor ataxics; there a group of deformed children; yonder, a girl in her teens is nursing a child who never will know its father. More 'wild oats.'

"Picture 3. An asylum. Here is a case of general paresis; there a melancholiac; in the next room a maniac can be heard shrieking. 'Wild oats' aplenty.

"Picture 4. A police court, full of drunks, criminals, and bums. 'Wild oats' again.

"Picture 5. A jail. Here are 'wild oats' of the striped, short-haired variety in abundance.

"Picture 6. A foundling asylum full of children cursed by society before they were born as 'bastards.' Poor little 'wild oats.'

"Picture 7. A doctor's office, full of anxious men and still more anxious women,

who do not gossip much about their ailments, even among their intimates, save when the women are told by the doctor a pretty little fairy tale for home use. 'Wild oats' growing in the dark.

"Picture 8. A brothel. Around the 'reception' room sits a collection of poor female creatures, many of whom were originally sacrificed in aiding youth to sow its 'wild oats.' These women are now getting poetic revenge, as the doctor knows.

"Picture 9. A beautiful girl is found dead in the river one fine morning. What is she doing there? Washing the 'wild oats' out of her life.

"Picture 10. A pistol shot rings out in a gambling hell—a man falls dead. The gun was loaded with 'wild oats.'

"Picture 11. A defaulting bank cashier flees to Canada; he is looking for a market for his 'wild oats.'

"Picture 12. A series of deserted babies are found in the snow. Who planted them there? Sowers of 'wild oats.'

"Picture 13. A wife, surrounded by her cold and hungry children is sitting weeping—eating her heart out. The husband and father is on a drunk; he has whipped her, is in jail, or has deserted her. 'Wild oats' make broken hearts; they are poor food for babies; they do not buy coal, nor cover nakedness."

Much valuable advice is given in regard to athletic exercise, the anatomy and physiology of the sexual apparatus, and diseases of the genito-urinary system are described in a manner which may readily be understood by the parents and also by the youths who are given access to these pages.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEYS. By Robert Holmes Greene, A.M., M.D., and Harlow Brooks, M.D. Third Edition, Revised and Enlarged. Illustrated. The W. B. Saunders Company, Philadelphia, 1912. Price \$5.00.

Here we have a volume in which a surgeon and a medical clinician have joined hands in the preparation of the text. In the past such attempts have often proved to be failures, but in this instance the authors have worked together with consistency and their views may be said to be

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practically never contradictory. That the book has proved useful is shown by the fact that three editions have appeared in five years. The opening chapters deal with the various methods, instrumental and otherwise, of examining the genito-urinary tract. Then follows a chapter upon diseases of the kidney, and one upon the blood in diseases of the kidney, and still another upon the ocular manifestations of renal dis-Special chapters then follow upon the kidney and acute infectious diseases, upon uremia, upon malformations and displacements, wounds and injuries of the kidneys, renal calculus and tumors of the kidney. The sixteenth chapter deals with the surgery of the kidney. The remaining chapters deal with the anatomy, physiology, and pathology of the bladder and the lower genito-urinary tract.

The book is printed in large type on heavy paper, is handsomely gotten up, and without doubt will prove of great value, not alone to specialists in this department of medicine and surgery but to the general practitioner, who, with the aid of the illustrations which are found on almost every page, and by a careful perusal of the text, can obtain safe and sane directions as to the methods which should be employed in the treatment of diseases of the genitourinary tract.

Modern Methods in Nursing. By Georgiana J. Sanders. Illustrated. The W. B. Saunders Company, Philadelphia, 1912. Price \$2.50.

If it is true that "of the making of books there is no end," it would seem to be still more true that this particular aphorism holds as to the preparation and publication of books intended for nurses, for within the last few years no department of medical literature has been so well supplied with new volumes as that dealing with the duties of the trained nurse. The present volume seems to be an excellent one. It embodies not only the experience of a nurse, who has been a graduate and superintendent of nurses for many years, but also a large amount of information which is derived from current medical text-books and diet-All together there are twenty-four chapters in the book, with an appendix devoted to recipes. There can be no doubt that the work is well done, even though it be true that a very large field is covered. After discussing the choice of a training school, the qualifications of a nurse, the commercial valuation of nursing and the school course, the writer takes up beds and bed-making, baths and packs, local applications, the various methods which are employed in medication or treatment by way of the rectum, and then studies the temperature, pulse and respiration, and indicates the duties of a nurse in training her powers of observation and examination. Bandages and splints, medicines and doses, poisons and their antidotes, elementary bacteriology and theories of immunity are next discussed, and then the various methods of surgical technique employed by the nurse when assisting the surgeon, or when acting for herself, are described. We would advise medical men and directresses of training schools to examine this book before making a decision as to the best one for the pupil nurses in training.

A CYCLOPEDIA OF AMERICAN MEDICAL BIOGRAPHY. Comprising the Lives of Eminent Deceased Physicians and Surgeons from 1610 to 1910, by Howard A. Kelly, M.D. Illustrated with Portraits. Volumes I and II. The W. B. Saunders Company, Philadelphia, 1912. Price \$10.00.

For a number of years many of Dr. Kelly's friends have been aware of the fact that he was preparing this very large work in an endeavor to put in permanent and accurate form a record of the lives and accomplishments of medical men. In a very large number of instances the biographical sketches have been written by men who by reason of relationship, the possession of historical documents, or their interest in medical history are well qualified to prepare the text. In addition to these authors an even larger amount of work has been done through Dr. Kelly having organized a corps of colaborers who have taken charge of different sections of the country. A list of these colaborers is printed in the preface. The introductory pages of the first volume cover seventy-five pages and deal with preliminary historical matter as to anatomy, surgery, gynecology, obstetrics, and the various specialties, including medical jurisprudence, the design being to show what medical men in America have accomplished in general terms.

It is manifestly quite impossible in a review of this kind to dissect the text or to criticize the individual biographical notices. The book is sure to become a classic in American medical literature, not only because of the theme with which it deals, but also because the text has been prepared with infinite care and is wonderfully accurate, particularly when we consider the long period of time which it covers.

PELLAGRA. An American Problem. By Dr. George M. Niles, M.D. Illustrated. The W. B. Saunders Company, Philadelphia, 1912. Price \$3.00.

The comparatively recent recognition that pellagra is a very common disease in the Southern portion of the United States, and that it occurs more frequently than many imagine in the Middle States as well, renders this volume an exceedingly timely one, even although some of the problems as to its causation and manifestations still need much investigation. The present book adequately and completely discusses the various theories and facts which are new concerning this curious disease, and includes chapters dealing with the treatment and prophylaxis of the malady. The other chapters, which will prove most interesting to the general practitioner, are naturally those which deal with the diagnosis and symptomatology of the disease. In view of the fact that the subject is a recent one, the author has seen fit to append a copious list of names of those who have made contributions to its study. It is a pity, however, that this list is not, strictly speaking, a bibliography but only a "Namen-register," since the numbers after the proper names only refer to the parts of the text in which the name is mentioned, and no information is given as to title under which, or journal in which, the literature can be found. This omission, however, in no way diminishes the value of the book to any one except he who may be seeking to make an exhaustive study of the disease.

IMMUNITY: METHODS OF DIAGNOSIS AND THERAPY AND THEIR PRACTICAL APPLICATION. By Dr. Julius Citron. Translated from the German and Edited by A. L. Garbat, M.D. Illustrated. P. Blakiston's Son & Company, Philadelphia, 1912. Price \$3.00.

The scope of this book is well defined in its title. It is not so much intended for laboratory workers as for clinicians, and in the language of the author is meant to serve a purely practical purpose. He has therefore endeavored to prepare a short text-book which would review in a purely medical form the various methods of immunity diagnosis, with especial reference to tuberculosis and syphilis. He deals therefore with methods diagnostic, therapeutic, and prophylactic, and as he has been a worker under Wassermann himself he is well qualified to prepare the The book has been very favorably received in Germany, and the American translator has carefully revised the chapter on Vaccine, having in turn been a worker under Wright. Those who wish to keep abreast of advances along these lines, and all of us certainly have this wish, cannot do better than obtain this book, which is concise, clear, and to the point.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by Leighton F. Appleman, M.D. Volume I, March, 1912.

The March issue of Progressive Medicine contains, as it has done in previous years, articles which afford a complete summary of the progress of medicine during the past twelve months in the following important departments of medicine: The surgery of the head, neck, and thorax is considered by Dr. Charles H. Frazier in an article of a little more than one hundred pages; the infectious diseases, including acute rheumatism, croupous pneumonia, and influenza, by Dr. John Ruhräh in an article of one hundred and twenty-four pages; diseases of children by Dr. Floyd

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M. Crandall in thirty-two pages; rhinology and laryngology by Dr. D. Braden Kyle in an article of fifty-two pages; and one by Dr. Arthur B. Duel, of New York, on otology which covers thirty-eight pages. It has been well said that the collaborators of Progressive Medicine are well chosen in that they are competent not only to sum up the literature of the year, but to increase its value by their personal suggestions and criticisms.

THE PHYSIOLOGY OF THE SEMICIRCULAR CANALS AND THEIR RELATIONSHIP TO SEASICKNESS. By Joseph Byrne, A.M., M.D., LL.B. J. T. Dougherty, New York, 1912. H. K. Lewis, 1912.

With the great mass of literature which presents itself for study from week to week and month to month it is somewhat appalling to be brought face to face with a volume of 569 pages devoted to a subject as limited as that named in the title of this That there is a definite relationship between the semicircular canals and the nausea and vomiting which is produced by the movements of a ship seems to be pretty well proved. The first 338 pages deal with the physiology of the semicircular canals, and about 190 pages are then devoted to studies in seasickness, while the last pages of the book contain no less than 288 references to the bibliography of seasickness and to that of the semicircular canals, and a copious index as to subjects and names. Those who are interested in this subject because they are going to sea, and medical men attached to ocean-going vessels, would do well to make a careful study of Dr. Byrne's book.

Home Hygiene and Prevention of Disease. By Norman E. Ditman, M.D. Duffield & Company, New York, 1912.

The text of this volume is a curious mixture because of its alphabetical arrangement. The opening pages deal with abscess, acidity of the stomach, and atony. Then follows asthma, babies lost by overlaying, banting, and bathing. It seems to be a book intended for the shelf of the man or woman who goes on the principle that every one

should be his own doctor. Under the heading "Hanging" occur the following words: "If ever you come across a person who has hanged himself or herself, or has been hanged by some one else—that is, if you see a body hanging by the neck—get a knife or scissors and cut the body down."

That the ground which the author has covered is a wide one is shown by the fact that in a page and a third which is devoted to training, a brief summary of a day's training for the boat races of Cambridge and Oxford is given.

FOOD FOR THE INVALID AND THE CONVALESCENT. By Winifred Stuart Gibbs. The Macmillan Company, New York, 1912. Price 75 cents.

Miss Gibbs has prepared a short book of recipes, for which Dr. Theodore C. Janeway of New York has written a very brief intro-The authoress is the teacher of Economic Cookery in the Teachers' College of Columbia University, and has written on this subject before. In addition to ordinary recipes there are pages devoted to special menus and diets arranged day by day so that the diet will be varied and adequate for the nutrition of the sick or well, whether they be children or adults. To those who care for the sick and have to deal with the difficult task of providing them with food which will be pleasant in taste and adequate in its nutritional properties, and who do not wish to study the subject of dietetics, the book can be commended.

THE INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioners' Index for 1912. E. B. Treat & Company, New York, 1912.

For almost every one of the thirty years that this book has appeared we have taken pleasure in cordially indorsing it as a brief résumé of medical advance. As in previous years, the opening chapters deal with therapeutics, special attention being paid to the activity of the pituitary body, to ergot and salvarsan, to which drug very properly a large number of pages are devoted. Following these discussions abstracts from the medical literature of the last twelve months are included dealing with most of the med-

ical and surgical conditions which are met with with sufficient frequency to make them useful to the general and special reader.

INTERNATIONAL CLINICS. Edited by Henry W. Cattell, M.D. Volume I, 1912. The J. B. Lippincott Company, Philadelphia, 1912. Price \$2.00.

This issue of International Clinics contains six articles dealing with diagnosis and treatment, six others dealing with problems in medicine; three in surgery, and one each in the departments of Otology, Obstetrics, Occupational Diseases, and Eugenics. There is also an account of the College of Physicians of Philadelphia by Dr. de Schweinitz, and an editorial summary of the progress of medicine during the year 1911 by A. A. Stevens, Edward Watson, and Lucius W. Johnson.

A SYSTEM OF SURGERY. Edited by C. C. Choyce, B.Sc., M.D., F.R.C.S. Pathological Editor, J. Martin Beattie, M.A., M.D., C.M. In Three Volumes. Volume I, Illustrated. Cassell & Company, Ltd., London, New York, Toronto, and Melbourne, 1912.

This book in three volumes, the first of nearly 1000 pages, and devoted to surgical pathology and general surgery, the second concentrating upon a systematic description of the surgical diseases of the various organs and regions by authors whose special knowledge and experience entitle them to write with authority, is especially designed to serve the purposes of the practical surgeon who desires to keep himself conversant with modern teaching, and of the senior student who aims at keeping himself abreast of sound and comprehensive surgery. list of authors includes upward of fifty names, many of them already widely known in this country, some with their spurs yet to win.

In accordance with the usual arrangement, the book opens with a section upon Surgical Bacteriology by Dreyer and Walker, excellently done, followed by the Therapeutic Applications of Surgical Bacteriology by John W. H. Eyre—an excellent study from the practical side. Inflammation is contributed by J. M. Beattie on recognized lines. Gangrene, Wounds and

Wound Treatment, Military Surgery, Burns and Scalds, Constitutional Disturbance Associated with Trauma, Tumors—these are subjects all satisfactorily summarized. There is a small subsection devoted exclusively to Drowning, an innovation in a surgical text-book.

From the surgeon's standpoint there is a most satisfactory section on Examination of the Blood and the Cerebrospinal Fluid by Beattie.

The chapter devoted to Radiography leaves something to be desired. The same may be said of the contribution to Anesthesia, with the exception perhaps of the section devoted to Spinal Analgesia; this is admirable. Tuberculosis is accorded less than 10 pages and Syphilis about 60, whilst to Salvarsan are given thirteen. The latter drug and its practical applications are carefully considered. Congenital Syphilis appears in a chapter by itself. Venereal Diseases cover about 45 pages. The book closes with a brief discussion of a variety of infections: Yaws, Maduro Foot, Glanders, Leprosy, Actinomycosis, Tetanus, Hydrophobia, and Anthrax, and surgical diseases caused by animal parasites, snake bite, etc. The descriptions are as a rule excellent. Judged by the first volume this work fulfils, from the standpoint of surgical pathology at least, the intent of its authors. It shows more than a passing knowledge of current literature, and a wise selection of the best has usually been made, but it exhibits the inequalities inseparable from a multiplicity of authors. None the less it is likely to be well received by the profession as affording them a ready reference in regard to a large variety of subjects.

THE SURGICAL CLINICS OF JOHN B. MURPHY, M.D., AT MERCY HOSPITAL, CHICAGO. W. B. Saunders Company, Philadelphia, 1912.

These clinics, issued in serial form, one number every other month, admirably illustrated, this number containing about 130 octavo pages, will be cordially received by the entire profession, but with especial enthusiasm by those whose privilege it has been to hear even once one of Dr. Murphy's

inspiring talks. Until this stenographic report of Dr. Murphy's teaching appeared it seemed to those familiar with his personal magnetism that such reports would fall short of carrying the vivid interest and the drive which are essential features of his work.

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The first part of the first volume opens with Carcinoma of the Breast, an admirable clinical discussion based upon a graphically described operation, embodying practically all that is rational and new upon the subject. Lipoma of the Shoulder, Varicocele, Nerve Anastomosis, Salvarsan, Cystadenoma, Pelvic Tumor, Laparotomy, Blood Clot in the Brain, Fracture of the Patella, Charcot's Disease of the Hip-joint, Nerve Anastomosis, Epithelioma of the Nose, Duodenal Ulcer these and some other cases are vividly portrayed. It is well worth every surgeon's while to know Murphy's views upon the clinical cases as they present themselves to him.

THE SURGERY OF ORAL DISEASES AND MALFORMA-TIONS. Their Diagnosis and Treatment. By George Van Ingen Brown, D.D.S., M.D., C.M. Illustrated. Lea & Febiger, Philadelphia and New York, 1912.

The author states that this book is designed to be one of reference touching the medical interests of dentists, general surgeons, internists, and those whose work has been limited to rhinology, ophthalmology, otology, pediatry, dermatology, and other divisions of medical practice. He further has endeavored to produce a book sufficiently concise and well systematized to permit of accommodation to the stringent time limitations of a college curriculum, and yet impressing the salient points to the best possible advantage, and so arranged as to facilitate the work of the students in preparing themselves for examination. over, the work is designed to be sufficiently comprehensive and practical to make it a useful guide in trying clinical situations Special labor has been after graduation. expended in an effort to present the subject with sufficient broadness to cover all affections directly and indirectly related. There are brief preliminary sections on Anesthesia and Hemorrhage, the latter illustrating methods of Arterial Anastomosis and Intravenous Infusion, Proctolysis and Shock.

The second chapter is devoted to Pathological Dentition; another to Infectious Diseases, including under this head Tuberculosis and Syphilis, Chancroid, Actinomycosis, Glanders and Leprosy. Thereafter follow sections upon Stomatitis and Diseases of the Nervous System affecting the Buccal Region. Among the latter are found Syringomyelia and Anterior Amyotrophic Sclerosis, affections which would not seem naturally to belong in such a book. over, there is a somewhat extensive section upon Diseases of the Brain, including Neuralgia, and its Surgical Treatment by Removal of the Gasserian Ganglion. There is a very admirable description of the modern methods of fixing fractures of the jaw, a most serviceable chapter on Prosthetic Appliances used after resection, excellent sections upon the sinuses, and extremely satisfactory descriptions of harelip and cleft palate and their treatment.

The book contains much more than its title indicates and excellently summarizes the salient points of the subject treated.

DUODENAL ULCER. By B. G. A. Moynihan, M.S. (Lond.), F.R.C.S. Leeds. Second Edition, Enlarged. Illustrated. W. B. Saunders Company, Philadelphia and London, 1912.

Moynihan notes that the term "dyspepsia" as used by the older writers included every form of disorder in which the activity of the digestive processes seemed impaired. In this great group of conditions, believed to be chiefly or entirely functional, we now recognize that probably the majority of cases are due to organic diseases affecting not the stomach only but also and more frequently various organs.

Among the various forms of organic diseases, duodenal ulcer stands out the clearest. We are now familiar with its symptoms, we have learned of its dangers, we are well equipped with the means of treating it with permanently satisfactory results.

One result of this surgical discovery must be that the physician, now knowing well that which formerly was not suspected, namely, the attachment of the symptoms he recognizes to an organic lesion, will insist upon a much stricter and a more prolonged medical treatment, and in this way it is probable that some at least of the cases which now seek help at the hands of the surgeon may be permanently relieved of their sufferings by this greater care, and escape the need of operative attentions.

The first chapter is devoted to the History of the Affection. Thereafter follow chapters devoted to Ulceration of the Duodenum in Cases of Burns or Scalds, Uremic Ulcer of the Duodenum, Tuberculous Ulceration of the Duodenum, Melena Neonatorum and Duodenal Ulcer, Differential Diagnosis, Chronic Duodenal Ulcer—Symptoms and Diagnosis, Treatment of Chronic Duodenal Ulcer, Jejunal and Gastrojejunal Ulcer, Perforation, and finally, Pathology.

There are appendices giving detailed statements of cases operated upon. The book is admirably illustrated, written in Moynihan's characteristic vivid style, and will necessarily form a part of every active surgeon's library.

THE IMMEDIATE CARE OF THE INJURED. By Albert S. Morrow, A.B., M.D. Second Edition, Thoroughly Revised. W. B. Saunders Company, Philadelphia and London.

Morrow states that this book is not intended to supplant the physician or surgeon, but is designed solely as a guide in emergencies until the arrival of medical aid, or when such aid cannot be procured. anatomy and physiology of the body are briefly considered, the latter entirely too Thereafter there is a well-illustrated chapter upon Bandages, Slings, Medication, and Practical Remedies. General principles are dealt with, and the application of cold, heat, counter-irritants, poultices and enemata, antiseptics and disinfectants is briefly considered. Thereafter follow chapters upon Contusions and Wounds, Burns, Scalds, and Exposure to Cold, Fractures, Dislocations, Sprains and Strains, Asphyxia and the Removal of Foreign Bodies, Unconsciousness, Poisoning and its Treatment, the Transportation of the Injured, Preparation in the House for an Accident Case.

The book is an excellent one for laymen,

entirely non-technical and easily understood, and giving in the main exactly the information required.

RECENT METHODS IN THE DIAGNOSIS AND TREAT-MENT OF SYPHILIS. By Carl H. Browning, M.D., and Ivy McKenzie, M.A., B.Sc., M.B., Ch.B. Lea & Febiger, Philadelphia and New York 1912.

This book, written in collaboration with Cruickshank, Chislett, Gilmour, and Morton, is a record of original work, toward the completion of which numerous grants have been received from the Carnegie Trust. There is an admirable introduction summarizing the principles upon which the modern diagnostic and therapeutic methods applicable to syphilis are based.

The first part of the book is devoted to the Diagnosis of Syphilis by the Serum Reaction of Wassermann, Neisser, and Bruck; the second to the Treatment of Syphilis with Salvarsan. There is an excellent bibliography appended to each chapter, a table of fatal cases, and some general conclusions on the subject of syphilis with which the profession in general is in thorough accord. The book is written for one who wishes to be conversant with the latest thought upon syphilis and its treatment, and can be commended without reservation.

A MANUAL OF SURGICAL TREATMENT. By Sir W. Watson Cheyne, Bart., C.B., D.Sc., LL.D., F.R.C.S. F.R.S., and F. F. Burghard, M.S. (Lond.), F.R.C.S. New Edition, Entirely Revised and Largely Rewritten with the Assistance of T. P. Legg, M.S. (Lond.), F.R.C.S. In Five Volumes. Volume I: The Treatment of General Surgical Diseases. With an Appendix upon the Administration of Anesthetics by Dr. Silk, and the Examination of the Blood by Dr. W. D'Este Emery. Lea & Febiger, Philadelphia and New York, 1912.

A new edition of Cheyne and Burghard will be received with double pleasure and profit by those familiar with this book, which was originally intended, nor has the policy been changed, to give detailed information based on a thorough knowledge of modern methods as regards the aftertreatment of cases.

Under Inflammation it is worthy of note that they state that drugs are of little advantage. Under Acute Inflammation Bier's treatment is considered in detail. The vaccines are apparently not well thought of. Gangrene is generally classed as dry and moist, nor are there any methods suggested other than those usually recognized. The practitioner is especially warned against the use of carron oil in the treatment of burns. The best dressing is regarded as cyanide gauze rinsed out in a 1-in-8000 sublimate solution, and salicylic wool.

Under Tetanus it is stated that a prophylactic administration of 10 to 20 Cc. of antitetanic serum is indicated in any case in which there is reason to suspect that the wound may be infected with the bacillus,

without waiting for the typical symptoms to develop.

Under the head of Keloid fibrolysin is advised.

There is a section devoted to the Treatment of Syphilis by Salvarsan. An extensive division of the book is devoted to Deformities. There is a very excellent section on Anesthesia. The volume ends with the examination of the blood and surgical conditions.

This is a serviceable book to the general practitioner who desires to keep abreast with the best English practice of the day.

### CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The "strike fever" which has been menacing the country with varying gravity during the past few months has now reached a really lamentable phase. For the gravediggers of Glasgow have struck to enforce their demands for shorter hours, more wages, and six days holiday per annum. They assert that there would be no need for them to strike if people buried their dead decently on a week-day, but as the popular Sabbath funeral deprives them of their Sunday rest, they demand extra pay for the accommodation. This recalls a strike which occurred at a hospital at St. Calais. The authorities refused to pay the usual price for the burial of those who had died in their institution, and the undertakers thereupon refused to accept their orders. The local grave-diggers started a "sympathetic strike" in their turn, and matters were only rectified after many disturbances.

We have at length happily reached the end of the coal strike at the cost of immense suffering among the poor, but the dislocation of trade and of the means of communication was not so marked as was anticipated at the beginning of the struggle. Those householders who were well stocked

with coal would scarcely have known, in London at any rate, that the strike was in progress except for the extra overcrowding on the trains and omnibuses.

A highly important development has taken place in connection with the negotiations between the medical profession and the Insurance Commissioners. In view of a possible breakdown in the negotiations the British Medical Association are considering a scheme for a Public Medical Service which will be controlled by the profession itself in every insurance area. The new scheme will be outside the authority of the state, and will doubtless be offered to insured persons as an alternative, if satisfactory arrangements cannot be made with the Commissioners. It appears that in 1909, some time before the introduction of the Insurance Bill, the Association drew up the basis of the scheme now under consideration, and it is thought that this scheme, with a few alterations, will easily be made adaptable to the present situation. The rules will provide for an income limit for persons insured, and a subscriber will be able to choose his own medical attendant but cannot change him more than once a Subscribers will only be admitted after a medical examination and will have to pay a fixed sum per week. A subscriber will be entitled to receive from his medical attendant, as long as his subscriptions are not in arrears, medical and surgical treatment at the doctor's dispensary, or if his condition requires it he will receive treatment at his own home, also all needful medicines and first dressings for wounds and other injuries. Special arrangements will be made for night calls, confinements, etc. It is to be presumed that the money allocated under the act for medical benefits would be handed over to the insured persons and that they would become subscribers to the Public Medical Service, but quite outside the Insurance Act.

The city of Bradford has distinguished itself by making a profit out of its sewage. The sewers of the town become filled with fat of some kind from the wool-washing which forms the staple industry of the place. Many efforts have been made to utilize the fat in London sewage and still more to save its manurial value. But the problem is still unsolved. Compressed mud from London sewage, as now treated, is valueless. It is cheaper to take it out by steamer and drop it in the North Sea than to compress it and sell it.

A bill has been introduced into the House of Commons to amend the Education (Provision of Meals) Act. Its object is to empower the education authority to continue the school meals throughout holidays and Various experiments even on Sundays. have been carried out by local authorities which show the need for the feeding of schoolchildren being continued during the holidays. One experiment carried out by Dr. Crowley showed that during the time the children were on holiday, instead of receiving benefit, they became actually physically less fit because they were not having the school meals.

Discussion is still going on as to the best site to be procured for the new home of London University. The latest suggestion is that the Royal Botanic Gardens should be used for this purpose, and as the present lessees find a difficulty in making both ends meet, the proposal may meet with favor. The gardens occupy about 18 acres, and as such an extensive area would not be needed

for the university buildings a large portion of the gardens as they now exist could be reserved for the use of the students. As the gardens are situated inside Regent's Park, there would be complete immunity from noisy traffic, while the situation is central and accessible from all parts of London.

The new Shops Act which comes into force next month is causing grave apprehension to the proprietors of restaurants in the city of London. The aim of the act is to improve the conditions of those serving in shops or employed in waiting. To this end the new regulations provide that each assistant shall stop work on one day a week at 1.30, and that all shall be allowed time for luncheon before 2.30. The proprietors claim that these arrangements will cause hardships to their staffs, as their waiters who depend on their tips would have to stop work at 1.30 on one day of the week —that is, at the busiest hour of the day. Also in many city restaurants the space is so limited that it is impossible to provide a separate room for the staff, who have to lunch in the restaurant itself after the midday rush of customers is over. these circumstances the new act, unless amended, may entail pecuniary loss and hardship to waiters when exactly the opposite was intended by the framers of the ineasure.

A national memorial to Miss Florence Nightingale is to be erected in front of the Infirmary at Derby. The memory of a great woman will be honored in her native county, and it is to be hoped that London will follow the good example thus set. It has been suggested that a Nightingale College of Nursing would serve as a memorial of her creative genius, at which her teaching could be carried on for all time. The educative character of the institution would have appealed to the "Lady of the Lamp," whose mission it was to carry the laws of health into the dark places of the earth.

A dirty school child ought soon to be a rara avis in London. According to the report of an education officer of the London County Council personal cleanliness is re-

ceiving much attention in the Council's schools. A few years ago the Council provided spray baths at the Strand School, and here the boys are bathed every morning before lessons commence. If it were not for the great cost involved such baths would be provided in all the schools, but in Whitechapel, where such measures are greatly needed, the scholars have been bathed in slipper baths to the great benefit of all concerned. The Council next sought powers to enable its officers to examine the clothing of the scholars, and as a consequence had to make arrangements for the cleansing of the clothing, where necessary. The ratepayers now have to pay about two shillings for every child who has to be made clean and fit for school attendance.

#### PARIS LETTER.

BY M. A. COURT TUCKER, M.D.

Numerous accidents have occurred in the past, and are most likely to be repeated in the future, through wide differences existing between the pharmacopæias of various nations. These differences are chiefly due to the respective capabilities of absorption of smaller or larger quantities of certain dangerous medicaments, which are at great variance in their administration, according to the medical modus operandi of the countries and races to which they are applied.

The evil consequences of such a state of things are obvious, and it would be advisable and prudent for individuals traveling abroad to obtain medical aid-as far as can be done-from doctors of their own nationalities, or at least from doctors who are well aware of the existence and nature of these dissimilarities. I have personally been able to trace many a serious mishap in my American and English clientele here to this source. For instance, in the States as well as in England calomel is very generally given in doses of one-tenth, onefourth, or even of one or two grains; in France the doses currently prescribed vary from ten to twenty grains. Belladonna solutions are customarily executed at 4.378

against 1.40 in America; jusquiame (tinct. hyoscyamin) is dosed at 1.72 against 0.30 (Prof. Dausse's statements); nux vomica is given at 16, whilst in Germany and in England it is given at 5. Extract of opium, which is proportioned at 20 in France, in Belgium, in Austria, and in America, attains only 15 in Italy. Opium powder in the States varies from 13 to 15, while the English Pharmacopæia places it between 9.5 and 10.5.

I am showing these examples in order to illustrate the dangers to which a single patient can be exposed upon being treated by different medical men.

Another cause of error finds its root in the abbreviation "gr.," which lends itself too easily to be transformed either into "grain" or into "gramme," so that a prescription bearing j gr. of calomel can almost naturally be read 1 gramme by a French chemist.

It must be pointed out that the climatic influences which can justify these medical discrepancies are solely applicable to patients born under them, and not indiscriminately and uniformly to people coming from distant parts of the world.

In obedience to a law promulgated February 5, 1905, a compulsory declaration must be made to local authorities by all doctors attending persons affected with epidemic diseases at the earliest stage of their symptoms. The righteousness of such a law can be well conceived and understood without the help of any commentary. During the last month of August it was rumored both in Fougères and Saint Surliactwo charming summer resorts on the borders of Brittany-that two cases of cholera had been detected in these localities. The season being then at its full height, and fearing the frightening away of the fashionable visitors gathered over there by the disclosure of such unpalatable news, the practitioners of the two towns mentioned thought it advisable to keep the matter quiet, and this unwholesome hushing soon had for result a spreading of choleriform enteritis, which threatened rapidly to develop into a disastrous calamity. In spite

of energetic measures, tardily taken, many were the victims of this guilty professional cupidity. Four of the local doctors are now implicated in prosecutions directed against them upon this ground; their responsibilities are heavy, and the consequences to themselves if convicted might well mean, besides other penalties, irreparable ruin.

In the course of a divorce action, the woman plaintiff in the case accused her husband of having committed gross acts of impropriety upon a child, a nine-yearold girl, and she brought and produced in court a medical certificate to this effect. The defendant indignantly repudiated the monstrous imputation. It was elicited by the defense that the child had not been examined medically by the certifying doctor, but that the latter had simply interrogated the child and had accepted for granted her story, delivering his certificate in conformity with this strange evidence. Naturally enough, the aggrieved party started immediately a counter-action, coming out of it with flying colors. The doctor in question was convicted of having exceeded his rights in signing a defamatory and most injurious document, with the aggravating circumstance of having proceeded in a case involving a criminal prosecution without being duly permitted by a magistrate, who has the sole right to cause information of such nature to be lawfully adduced. vere blame, heavy damages and costs were ordered before the curtain was drawn upon this unsavory affair.

Nursing has lately become so extended in its activities in France that the medical body is at present up in arms against the encroachment of the nurses, who are apparently taking day by day an active initiative toward patients and dispensing medicines to their temporary wards, thus tampering dangerously with the duties of their qualified masters. This kind of abuse has of late been so general that the proper authorities have taken stringent measures to bar the way to its continuation.

### "ANESTHESIA BY VARIOUS METHODS."

To the Editor of the THERAPEUTIC GAZETTE.

SIR: In your editorial on "Anesthesia by Various Methods" in the March number (p. 183) you speak of Mr. Davies' method of intralaryngeal etherization, and go on to say that "Ehrenfried uses scopolamine and morphine before this method is attempted."

I have had no experience with Mr. Davies' double catheter; my experience has been entirely with the single tube introduced to near the bifurcation of the bronchi, after the method of Meltzer and Auer, and I have found it entirely satisfactory. I do not consider the double tube necessary, or even advantageous, and plugging of the larynx seems to me irksome and likely to be productive of ill effects.

I have never advised the use of scopolamine and morphine as a preliminary to any form of anesthesia, although the Lancet, which you refer to as your authority, makes that statement. As a matter of fact, however, I do employ morphine and atropine subcutaneously in doses not exceeding gr. 1/4 and gr. 1/100, respectively, where good indications exist, such as extreme nervousness, bronchitis, and incipient delirium tremens, by whatever method the ether is to be administered. Very truly yours,

BOSTON, MASS.

A. EHRENFRIED.



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### ORIGINAL COMMUNICATIONS.

# THE TREATMENT OF SEASICKNESS—A REPORT OF TWENTY-TWO CASES TREATED BY VERONAL.1

BY ISAAC W. BREWER, M.D. First Lieutenant, Medical Reserve Corps, U. S. Army (Active List).

A large proportion of the passengers on seagoing vessels suffer from seasickness. Gihon estimates that 5 per cent are immune, that 25 per cent are but a little sick, that 60 per cent are a great deal sick, and that 10 per cent are distressingly ill. However, these figures cannot be taken to mean that these proportions are always sick. During calm weather very few suffer, while during severe storms a large proportion of the passengers will be sick. There are persons who never set foot on a steamer without being sick.

The literature upon seasickness is very unsatisfactory, and detailed studies of its symptoms and treatment are to a large extent lacking. Few of the many remedies that are recommended are of any service.

Seasickness is closely related to carsickness and elevator-sickness, and they probably have a common cause. That the motion of the ship is the exciting cause there can be no doubt, but it seems that back of this there is an underlying nervous instability that is the predisposing cause. There have been many theories advanced as to the cause of the disease. One is that the constant vibration irritates the nerve endings in the semicircular canals. Other theories are the visual irritation by the con-

stant motion of the surrounding objects, the shaking of the stomach, intermuscular shaking, concussion of the brain, and autointoxication. None of these theories seems to satisfy the conditions as observed in a large number of cases.

Seasick persons may be classified as follows:

- 1. Those who are but slightly ill, suffering from malaise, giddiness, followed by headache, yawning, and drowsiness, with some distress in the stomach.
- 2. More severe cases, in which there is nausea, vomiting, vertigo, anorexia, moderate prostration, grayish pallor, and unsteadiness of gait.
- 3. Cases in which there is extreme nausea, continued emesis, and great prostration. In one case the vomiting was so severe that a vessel in the stomach was ruptured and considerable blood lost, and the child was ill for several days after landing. I know of a physician who in addition to the other symptoms suffers from a severe diarrhea whenever the sea is rough.

Almost every one who has suffered from seasickness has a sure cure for the disease, but when these remedies are tried by others they generally fail. Many physicians who go to sea have come to the conclusion that there is no cure for the disease, and that

<sup>&</sup>lt;sup>1</sup>Published by permission of the Surgeon-General, United States Army.

the best that can be done is to keep the patient in the recumbent position in the fresh air, and to endeavor to maintain proper nourishment.

This was about the position occupied by the writer when he was detailed as surgeon of one of the army transports in 1910. The ship to which he was attached made trips throughout the Philippine Archipelago, frequently making the ports on the east coast of the Island of Samar, which have an unenviable reputation for rough-Shortly after joining the transport there appeared in the Lancet a short notice of fifty cases of seasickness that Dr. Pauly, of the Hamburg-American Line, had treated with veronal-sodium. The results were so encouraging that an endeavor was made to obtain some of the drug, but it could not be had in the Orient. A supply of veronal was obtained and used with satisfactory results. However, in interpreting these results the reader should remember that during fourteen months our vessel did not encounter a severe storm, a most unique experience in the Philippine waters. There were days when the sea was rough and many persons were sick. Some of those treated had never made a voyage without being sick. In all twenty-two cases were treated, 81.8 per cent being relieved entirely, and 18.2 per cent were not benefited. In every instance the person was actually ill when the drug was administered, and in most instances relief was had within thirty minutes. A number were treated on several different occasions with good results. In several instances after it had been demonstrated that the drug would relieve the symptoms it was used a second time as a prophylactic. Usually the relief was prompt and permanent, and more than once the patient was able to return to the saloon at the second sitting and eat a good meal.

At first the drug was given in doses of

0.324 gramme, but later it was learned that doses of 0.120 gramme were just as effective. Unfavorable symptoms were had in three cases. The first was a man, who was given 1 gramme in three doses covering a period of twelve hours, with relief of the seasickness, but on the following day when he landed he had lost, to a considerable extent, the power of coördination and staggered like a drunken man. The condition improved in the course of the day, and on the following day he was entirely well.

The second case was a young woman, who was given 0.324 gramme in two doses at an interval of one hour. This relieved the symptoms promptly, but she was drowsy for two days.

The third case was a neurasthenic lady who was accustomed to "faint." She was given 0.120 gramme, but vomited in a few minutes. A second dose of the same size was given at once, and in about an hour she fell from her chair. Her pulse was weak and the respiration shallow, but these symptoms were quickly relieved by the administration of 15 Cc. of aromatic spirits of ammonia. However, she complained of numbness in the arms, hands, and legs for several hours.

### CONCLUSIONS.

Twenty-two cases studied under rather favorable weather conditions do not warrant us in assuming that veronal will cure as many cases under more severe weather conditions. It seems that the drug holds a high place in the treatment of seasickness, and that it will relieve cases that have not been reached by other remedies.

Veronal is not a safe drug to put in the hands of the public to be used in the treatment of seasickness.

The unfavorable results obtained seemed to have been due to the use of too large a dose.

#### UNTOWARD EFFECTS OF SALVARSAN REFERABLE TO THE EYE AND EAR.

BY SIDNEY L. OLSHO, M.D., PHILADELPHIA.

The tempering of the extravagant claims first made for salvarsan occasion no surprise to physicians of long experience. Ehrlich<sup>1</sup> himself admits that it is impossible to have established firmly the therapeutics of the new preparation in the time that has elapsed since its introduction. He comments on the fact that the therapy even of mercury is not yet perfectly understood.

The accumulated clinical laboratory and experimental evidence of the spirillocidal action of salvarsan seems incontrovertible. The recurrences following its use are explained on grounds other than non-specificity.

Annoying by-effects attracted attention from the very first. Many of these have been found avoidable and are avoided by certain clinicians with the advent of improved technique of administration and a better understanding of the therapeutics.

Untoward effects of greater importance now attract attention. These are referable to the cranial nerves. Until it is definitely established just how far these so-called regional recrudescences are attributable to toxic action of salvarsan and how they may be avoided, if avoidable, the therapeutic status of the new preparation must be considered as still unsettled.

Cases of optic neuritis, some of them transitory, following the use of salvarsan are reported by Finger,<sup>2</sup> Kowalewski,<sup>3</sup> Blaschko,<sup>4</sup> Held,<sup>5</sup> Rille,<sup>6</sup> Oppenheim,<sup>7</sup> von Zumbusch,<sup>8</sup> Fordyce,<sup>9</sup> Falta,<sup>10</sup> Heuser,<sup>11</sup> and others.

Igersheimer,<sup>12</sup> experimenting on animals, showed that there was an accumulation of arsenic in the eyeballs of those that had received injections of salvarsan. Elsewhere<sup>12</sup> he asserts that not only has salvarsan no injurious action on the eye, but in many cases in his experience it had a curative effect on existing syphilitic eye affections.

A case of oculomotor palsy is reported by Stern. <sup>14</sup> Davids <sup>15</sup> reports a case of bilateral iritis in eyes previously sound, accompanied by a pronounced Herxheimer reaction, developing two days after the first and subsiding promptly after the second intravenous injection of salvarsan. Heuser<sup>11</sup> reports a case of iritis and epileptiform convulsions. Epileptiform convulsions are reported also by Spiethoff<sup>18</sup> and Gilbert.17 Falta10 notes the aggravation of deep eve disturbances in two cases under salvarsan, and thereafter the failure of the disturbances to retrogress, as they usually do under mercury. Fleming18 studied the histories of 180 cases of syphilis of the eye treated in Greef's clinic. Improvement of the subjective symptoms occurred, but they were no more pronounced than with the older antisyphilitic measures. Eight cases in the series had a relapse. Ill effects were attributed to the lues itself rather than to the treatment. The general tendency is to blame the salvarsan for everything that occurs subsequent to the injection. Eye disturbances may be only seemingly more frequent under salvarsan treatment. routine eve examinations now made reveal many cases of eye disturbance that hitherto might have escaped notice. Dimmer<sup>19</sup> treated with good results many eye lesions, including seven cases of iridocyclitis luctica. In one case there was a recurrence with severe papilloretinitis. Doerr<sup>20</sup> treated 270 cases successfully.

From the first Ehrlich¹ warned against using salvarsan in cases which had undergone previous arsenical cures. This warning was disregarded even by Finger. Ehrlich originally excluded all eye diseases from salvarsan treatment, but its use was gradually extended to cases of syphilitic iritis, neuroretinitis, and iridocyclitis. And according to him, good results have been obtained in these conditions by Deutschmann, Gross, Havas, Igersheimer, Romer, Schanz, Wechselmann, and Seligsohn. Gross gave salvarsan in optic atrophy. An acute injury did not occur, but a slight im-

provement was obtained in some of the cases. Hirsch<sup>21</sup> favorably influenced a severe case of optic neuritis, although the prognosis was bad. From these facts and from the fact that of the thousands of cases that have been treated no case has been blinded, Ehrlich concludes that salvarsan, as such, has no unfavorable influence on the eye. His explanations for the untoward effects referable to the eye and ear which are attributed by others to salvarsan are discussed together.

Auditory and labyrinthine disturbances following the use of salvarsan are reported by Finger,<sup>2</sup> Frey,<sup>22</sup> Rille,<sup>6</sup> Kren,<sup>28</sup> Urbantschitsch,<sup>24</sup> Matzenauer,<sup>26</sup> Ullman,<sup>26</sup> Rusch,<sup>27</sup> Beck,<sup>28</sup> Zechmeister,<sup>29</sup> Alexander,<sup>30</sup> Richards,<sup>31</sup> Lazarus,<sup>32</sup> von Zumbusch,<sup>8</sup> Port,<sup>33</sup> Ehrmann,<sup>34</sup> Sellei,<sup>35</sup> Treupel and Levi,<sup>36</sup> and others. The disturbances in some of the cases were transitory.

Cases of facial palsy have been reported by Rille,<sup>6</sup> Zeissl,<sup>37</sup> Heuser,<sup>11</sup> Treupel and Levi.<sup>26</sup>

Heuser also reports a case of paralysis of the vocal cords and the soft palate three days after an intravenous injection of 0.5 gramme, followed for two months by occasional outbreaks of profuse perspiration, suggesting a possible general injury of the nervous system.

Finger<sup>2</sup> says that his cases of untoward symptoms referable to the optic, auditory, and oculomotor nerves disprove the absolute harmlessness of the preparation, but that part of the injuries may have been due to the poison of syphilis. Commenting on Igersheimer's experimental research, he says that the finding of arsenic in the eyeballs of the animals certainly suggests caution.

Von Zumbusch collected from the literature nine cases of auditory disturbance occurring among a total of 7000 cases treated.

Benario<sup>38</sup> collected the experiences of a number of physicians by letter. There were 126 neuro-recurrences in a total of 14,000 cases treated with salvarsan.

Beck89 examined over 100 syphilitics in Urbantschitsch's clinic after salvarsan treatment. He states that changes may be observed in the internal ear after the administration of the drug. In three cases particularly, he noted changes in the laby-The symptoms aprinth and vestibule. peared in from five to nine weeks after the treatment, in ears to which the patients had never had their attention attracted before. Treatment for three weeks had not modified the conditions. Another case showed symptoms typical of Menieriform modified the conditions. Another case changes in the vestibular nerve appearing four months after the injection and not yielding to treatment. Similar symptoms have been observed in untreated syphilis, but they almost invariably show a decided tendency to retrogress, while in the above case they have persisted. He knows, however, of a similar persisting syndrome in a case in which no salvarsan had been given. He adds that ear affections in untreated syphilis are comparatively rare, while they have become unusually common since the introduction of salvarsan.

Mayer.40 basing his conclusions on the histories of 65 cases of syphilitic disturbances of the auditory nerve, observed since 1896, and on 66 cases reported previous to that time, says that the series shows that the auditory nerve is liable to become affected as early as six weeks after infection, and that auditory trouble is most common in the first six months. It may, however, occur years later, as a recurring syphilitic The comparatively large manifestation. number of cases of isolated vestibular disturbances occurring soon after salvarsan, some within a few hours of the injection, point rather to a toxic action of salvarsan.

Ehrmann<sup>30</sup> ascribes the disturbances in the ear, in part to the Herxheimer reaction, in part to the syphilitic process itself, and in part to the direct action of the mercury or salvarsan. But he believes it is more liable to occur in the cases with local infiltration or gangrene at the site of the injec-

tion because of the possible decomposition of the salvarsan in tissues of this kind. Abuse of tobacco also may, in his opinion, render the auditory nerve particularly susceptible. Ehrmann mentions two cases of auditory disturbance under mercurial treatment.

Frey<sup>41</sup> remarks that auditory affections due to acquired syphilis are common, but are now attracting particular attention. Auditory examinations are more frequent than heretofore, thus the presence of unsuspected disturbance is revealed.

Wechselmann<sup>42</sup> attributes the after symptoms observed in the nervous system to spirochætæ which have become encapsuled in single areas withdrawn from the influence of the salvarsan. These, after a certain time, manifest their presence by giving rise to regional recurrences. describes here several cases occurring in the iris and in the trochlearis. Benario's88 collection of cases of neuro-recurrences confirm, he says, Ehrlich's explanation of these disturbances, namely, as manifestations of syphilis in nerves enclosed in narrow bony canals, the work of a few spirochætæ which have escaped destruction. The striking clinical symptoms are due not as much to the extent of the process as to the confined site. Study of the data collected shows that the early secondary stage is peculiarly predisposed to these neurorecurrences, as also are the cases in which the primary sore is extragenital. Port,88 however, thinks that the neuro-recurrences are due to toxic injury of the nerves, not only by the endotoxin of the germs killed but also by the drug itself.

Ehrlich's explanations are based on the experiences with thousands of cases at scores of clinics with which he keeps in constant touch. He states that among 7000 cases at 25 clinics there were nine cases of acoustic disturbances, part of them associated with disturbances in other nerve regions. He claims to have established:

1. The disturbances mentioned occurred exclusively in patients who were treated subcutaneously, mainly by the emulsion method, by a single dose, not followed by forced administration of salvarsan.

- 2. That without exception the patients were in the fresh stage of the disease, namely, two to eight months after infection.
- 3. That in the preponderance of the cases the Wassermann reaction was negative.

Ehrlich does not admit that salvarsan has a toxic influence on certain nerve regions, arguing:

- 1. That the same symptoms, optic and acoustic, occurred in recent syphilis treated with mercury, as has been pointed out by Benario and Urbantschitsch.
- 2. That those who employed the largest doses of salvarsan, viz., Gennerich, Duhot, Weintraud, did not observe these disturbances. If the salvarsan were toxic these observers logically should have the largest number and the most severe of these cases.
- 3. That a portion of the cases observed were promptly benefited by antisyphilitic remedies, and that in some instances the cure was brought about by additional salvarsan. If toxic, salvarsan would have aggravated these cases.
- 4. That spontaneously occurring acoustic and optic disturbances are excellently influenced by salvarsan.

Ehrlich concludes that optic and acoustic disturbances are natural phenomena of recent syphilis and are recurrences in nerve tissue, and are not manifestations of a toxicity of salvarsan.

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### DILATATION OF THE PROSTATIC URETHRA FOR THE RELIEF OF THE SYMP-TOMS OF PROSTATIC ENLARGEMENT.

BY E. HOLLINGSWORTH SITER, M.D., Genito-Urinary Department, University Hospital, Philadelphia.

With the results of the prostatectomies of a number of operators coming before me from time to time in the wards of the Philadelphia General Hospital, and the outwards of the same institution, it is constantly impressing itself on my mind that less radical procedure would be of advantage, as I think the percentage of failures is too large by far.

We see many patients with persistent vesical sinus, or wearing apparatus for the constant dribbling, and surely the last conditions are worse than the first; the remedy worse than the original trouble. Of course, it is unfortunate that all results are not brilliant, but as they are not, we should face the facts and try to remedy or avoid them, if possible.

The Bottini operation having been discarded, the only procedure left for the relief of the symptoms of prostatic enlargement is prostatectomy. But there are many cases not fit for the sometimes prolonged anesthesia and shock of prostatectomy; for such some simpler method should be devised.

Some years ago, a patient upon whom I proposed to do a suprapubic prostatectomy did not do well with his ether after I had opened his bladder, and I was led to try dilatation of his prostatic urethra with my finger. My results were so gratifying that

I have since employed this method frequently. This patient's urinary difficulties disappeared. His age was sixty-five years, and owing to the fact that there had been no disturbance or injury to his ejaculatory ducts and vesicles, he had had no interruption of his sexual life.

With this idea in view, I some years ago tried the dilatation of the prostatic urethra through a suprapubic opening, with the removal of the "third lobe" of the prostate where it existed. My results have been so satisfactory that I feel that the method should be given further trial, and possibly adopted in many cases in preference to the more radical prostatectomy.

Operation.—Anesthetic, either a general anesthetic, which is not necessary, or spinal stovaine-strychnine anesthesia, or local with cocaine or beta-eucaine.

A very small suprapubic opening is all that is necessary, just sufficient to admit the passage of one finger into the bladder. The finger having been passed in and down the vesical neck, the "middle lobe" can be easily removed if it is found to bar the opening into the prostatic urethra. "middle lobe" having been removed, forcible dilatation is practiced by pushing the finger as far down into the urethra as possible and allowing it to remain for five minutes. The finger is then withdrawn, and the bladder is irrigated with sterile water or normal salt solution. A catheter is introduced through the urethra and tied in. The suprapubic wound is entirely closed, allowing drainage to be from the catheter.

The catheter is left in place for fortyeight hours, and the bladder is irrigated twice daily with normal salt solution. After the catheter is withdrawn it should be passed twice daily for several days to relieve the suprapubic wound from strain until the union is firmly established.

The daily irrigation should be continued over a period of ten days or two weeks, and I have found that silver nitrate in 1:6000 solution restores tone to the bladder more rapidly than any other preparation.

A glance over the following cases will illustrate the points of advantage:

Case 1.—July 12, 1906. W. E. B., aged fifty-six, married; urinating every hour and a half during the day, and five to six times at night. Some tenesmus, no hematuria, no venereal history. Urethral caliber 28 F.; moderately enlarged, fairly hard prostate, by rectal examination; residual urine, 2 ounces. Microscopical examination showed pyuria.

Operation July 14, 1906. Anesthetic, ether. Small suprapubic incision in median line. Intravesical examination revealed small median lobe. This was removed, and the prostatic urethra was dilated with the finger. The suprapubic wound was entirely closed and a catheter was tied in and retained for forty-eight hours. Daily irrigation with 1:6000 nitrate of silver. Recovery prompt. Out of bed in five days.

July 18, when daily catheterization was stopped, the patient was urinating five to six times daily, and did not rise at night. This patient has reported from time to time and has had no return of his vesical symptoms, nor has there been an interruption to his sexual life.

Case 2.—August 3, 1906. J. B. E., aged sixty-one, married; no children; vague venereal history. Urinating every two hours, imperative; up four to five times at night. Takes No. 26 French sound with

ease. Residual urine 6 ounces. Large, soft prostate; some cystitis.

Operation August 5, 1906. Cocaine anesthesia. Small median suprapubic incision. Bladder examination showed small transverse band across urethral opening. Band was removed and dilatation was done with the finger. Wound closed. Catheter retained for forty-eight hours. Daily irrigation with silver nitrate. Up in chair in four days, with no return of vesical symptoms.

Patient reported in four months that there was no return of symptoms and that sexual function had not been interrupted. He was seen two years after operation, and while there was no day frequency, he was rising once at night. There was practically no residual urine. He was irrigated with nitrate of silver several times, when his symptoms disappeared. I have irrigated this patient at intervals since, but at no time have his vesical symptoms returned.

Case 3.—September 12, 1906. J. A. C., aged seventy. No venereal history; urinating every hour and five to six times at night. Urethral caliber No. 28 French. Large, soft prostate. Residual urine 8 ounces.

Operation. Anesthetic, cocaine, 2 per cent. Suprapubic cystotomy. No median lobe. Digital dilatation; suprapubic wound closed; catheter drainage; irrigation, silver nitrate 1:6000. Patient was up on the fifth day.

September 24, 1906, patient reported that he was urinating every four hours during the day and once at night. No residual urine. March 19, 1909, no return of vesical symptoms.

October 29, 1910, patient had return of urinary difficulty; some cystitis; urinating every two hours during the day and three times at night. Residual urine 4 ounces. November 6, 1910, operation of four years ago repeated under cocaine. Vesical examination through the suprapubic wound showed contraction of prostatic urethra. November 18, 1910, patient urinating every four hours and does not rise at night.

Cystitis had subsided. November 15, 1911, patient reported no return of symptoms.

Case 4.—November 12, 1906. S. L. B., aged sixty-eight, married. Gonorrhea many years ago. Complained of constant dribbling and wetting of clothes and bedding. Urethral caliber No. 28 French; soft prostate of moderate size. Residual urine 10 ounces; marked cystitis.

November 20, 1906, operation. Suprapubic cystotomy under cocaine. Rather marked median lobe. This was removed, the prostatic urethra was dilated, the suprapubic wound was closed, and catheter drainage was put in. Irrigation with silver nitrate twice daily.

November 30, 1906, patient was out of bed. No residual urine; cystitis nearly disappeared; no dribbling. Urinating every three hours during the day and rises once at night.

December 10, 1906, patient reported urinary conditions same as on November 30. Urine was practically clear.

May 20, 1907, cystitis had disappeared; no residual urine. Urinating every four hours during the day and rises once at night.

December 23, 1907, patient reported no change. Urine was clear.

May 6, 1911, condition satisfactory and no return of symptoms.

Case 5.—November 26, 1906. W. F. B., aged sixty-two, single. Two attacks of gonorrhea; last attack twenty years ago. Complained of a gradually increasing difficulty in urinating with increasing frequency and great disturbance at night.

Urethral examination negative. Residual urine 6 ounces. Rectal examination, moderate prostatic enlargement, fairly hard; some tenesmus with occasional hematuria. Urinated every hour during the day and every two hours at night. Pus and a few red blood cells found in the urine.

Operation November 28, 1906. Cocaine locally. Patient had very much thickened bladder walls and a moderate median lobe. The median lobe was removed and digital dilatation done. Suprapubic wound closed;

catheter drainage for forty-eight hours, with irrigation of 1:6000 nitrate of silver twice daily. Patient was out of bed on the fifth day, the vesical symptoms rapidly subsiding; urinating every three hours during the day and but twice at night.

December 10, 1906, urine clear. Urinated every four to five hours during the day and once at night.

This patient since his operation in 1906 has had two relapses, and the same procedure, i.e. dilatation, was gone through with, and the results have been satisfactory each time. The last operation was done October, 1909, and there has been no return of symptoms so far.

Case 6.—June 10, 1907. H. A. F., aged sixty, married. Two attacks of gonorrhea; last one thirty-five years ago. Complained of frequent and imperative urination, which was particularly annoying at night; urinating every three or four hours during the day and four or five times at night. Urethral examination negative. Residual urine 4 ounces. Rectal examination showed moderate enlargement.

June 18, 1907, operation. Ether anesthesia. Suprapubic cystotomy. Removal of a small median lobe and urethral dilatation. Wound closed; catheter drainage and irrigation.

June 28, 1907, subsidence of nocturnal symptoms, and urination during the day not so imperative. July 6, 1907: Does not rise at night. Urinating four to five times during the day.

I have seen and heard from this patient frequently since 1907, and he has had no return of his difficulty.

Case 7.—September 10, 1908. W. H. M., aged sixty-three, married; no venereal history. Complained of frequent urination, both diurnal and nocturnal. Urethral examination negative. Residual urine 10 ounces. Rectal examination showed moderate soft prostate.

Operation October 1, 1908. Cocaine locally for anesthesia. Suprapubic cystotomy, removal of a third lobe, and dilatation were done. Wound closed; catheter drainage and irrigation.

October 10, 1908, great relief from symptoms. Cystitis modified, but annoying. October 20, 1908, cystitis was still troublesome, and daily irrigation was continued, with the passage of a full-sized sound. November 2, 1908, cystitis had almost entirely disappeared and urine had cleared up. November 15, 1908, patient had no difficulty whatever.

I have seen this patient many times since and his condition is still most satisfactory.

I have now used this method on a number of cases and they have been most satisfactory. There is no loss of blood, practically no shock, and the patient can be up and about in a few days.

To recapitulate, I think dilatation has the following points to recommend it: absence of shock, absence of interruption to sexual life, brevity of the operation, absence of secondary hemorrhage, quickness of recovery, absence of postoperative incontinence, and the fact that the operation can be done at once without waiting for the disappearance of a long-continued and troublesome cystitis, due to the catheter life so many prostatics lead before they come to operation.

Then, again, the operation is so simple and safe that I would not hesitate to repeat it in a few years or every few years, if there is no permanency to the relief and there is a return of symptoms.

# THE ADMINISTRATION OF ANESTHETICS, WITH SPECIAL REFERENCE TO CHLOROFORM AND ETHER ANESTHESIA.

BY W. P. BURDICK, M.D., KANE, PENNSYLVANIA.

Although in the routine of a general practice extending over twenty-three years I have administered many anesthetics, it has only been during the past two years, or during the period of my connection with the Kane Summit Hospital, that I have given the subject special attention. During these two years, however, and somewhat to my surprise, the study of anesthetics has become exceedingly attractive and interesting to me. I think I can truthfully say that after fifteen or twenty years of practice, and the occasional administration of an anesthetic, I had no more practical working knowledge of the subject than when I began; and I believe this to be the experience of most practitioners. what I may now claim as a fairly expert knowledge of anesthetics, I look back with apprehension to a time, not so long ago, when I considered myself quite clever in the administration of chloroform and ether, solely on the ground that my patients did not die on the operating table. I now realize, however, that there are certain people retaining their grip on earthly things who must give the credit to some higher power than myself. I thought that the most important thing was to get my patients asleep, and keep them asleep. Not only did I but slightly realize the imminent danger my patients must often have been in from imperfect administration of the drug, but I practically gave no thought at all to the postoperative tortures that lasted for days, and were mostly due to the same cause, and very slightly, if at all, to the operation.

It is generally accepted as a fact that the average patient who is to submit to a surgical operation, where an anesthetic is required, dreads the anesthetic, as a rule, far more than the operation itself. This is especially true if the patient has once passed through the ordeal of a faulty administration. It is partly because of a realization of this fact that we have had the recent widely extended agitation demanding specialism in anesthetics, and proper provision for instruction and teaching on the subject in our medical schools. In his presidential address in 1908, Dr. Baldy of Philadelphia made the following statement: "The general administration of anesthetics as performed to-day is the shame of modern surgery, and a disgrace to a learned profession." Dr. Hunter Robb

has said: "If any one of us were going to be operated upon and had time to do so, he would undoubtedly make three stipulations. He would, I think, demand first the best possible hospital facilities; secondly, a skilled operator; thirdly, a skilled anesthetist. When a patient dies upon the table from the anesthetic we are very properly shocked; but how about the later suffering or even fatalities, from an improperly administered anesthetic?"

Since the attention of the medical world was called in so forcible a manner to these deplorable conditions, there has been, as I have said, an almost universal awakening, and the result is that even now most hospitals, especially in our larger centers, have specialists in anesthetics, with complete modern equipment for administration by the most approved methods.

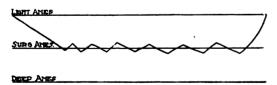
The word anesthesia is defined as a loss of sensation, and may be general or local. In general anesthesia, sensibility, or consciousness as well as sensation, is lost. I shall confine this paper to a discussion of general anesthesia, with special reference to the administration of chloroform and ether. When patients are admitted to the hospital for operation, I call and introduce myself as the physician who is to administer the anesthetic. After making an examination of the heart, etc., I engage the patients in conversation, the object of which is to allay fear and anxiety. I assure them that they will take the anesthetic without any trouble, that I will give it slowly, and that there will be no disagreeable sensations. I give instructions to the nurse that the patients shall have plenty of water to drink throughout the night, and shall frequently use during the evening and the next morning an antiseptic mouth-wash. I also receive, before leaving, a report of an analysis of the urine. It is the routine practice of many surgeons to order a preliminary hypodermic injection of from onesixth to one-fourth of a grain of morphine, usually with a small dose of atropine, given ten minutes or a half-hour before operation. Other surgeons object to the use of these drugs, among them Dr. Even O'Neil Kane, surgeon to the Kane Summit Hospital. I will give the reasons for and against their use later in this article.

When the patient is brought into the anesthetic room absolute quiet is insisted upon, for it should be remembered that all sounds are very much magnified to a patient who is about to pass into the second stage of anesthesia. The friends are kindly but firmly excluded, and I prefer even not to have the family physician present, as he is very apt, in his anxiety to make good, to tell the patient with many reiterations that he is all right, that he (the physician) is right there on the job and will stay by him; or he instructs the patient to take deep The subject for anesthesia breaths, etc. should never be told to breathe deeply, nor be requested to count; both have a tendency to arouse the patient's fears and disturb tranquillity.

When the anesthetist is ready to begin, the patient is told in a low voice to close the eyes and go quietly to sleep; and occasionally, during the first two or three minutes, it should again be suggested in the same low tone that he try to go to sleep, and to keep the eyes closed; or, "Don't mind the smell in the beginning, etc." Never say, "Don't mind the smothering sensation"—that is sure to cause anxiety. We are now considering the administration of ether or chloroform alone, and not preceded by ethyl chloride, or nitrousoxide gas, or any mixture. Murphy prefers ether. Keen uses it without the sequences in 95 per cent of his operations, as do many others. At the Kane Hospital ether is used almost exclusively.

A small layer of absorbent cotton moistened with boracic acid solution is placed over the patient's eyes, and an inhaler, which is an improved Schimmelbusch, is used. The inhaler is covered with a pad consisting of about six layers of gauze, and I also use a long pad or towel composed of several layers of gauze for reënforcement as the anesthesia proceeds, wrapping it around the border of the inhaler, and dropping the ether through the opening at the top. I also use a drop bottle. The

drops are small, and it can be easily regulated, by means of the thumb-screw, to drop with the desired frequency. mask being placed over the face, two or three inspirations are allowed without any ether. Then a few drops of cologne are used on the mask, and in a few seconds four or five drops of ether. The patient is then asked if the smell is pleasant. I then proceed steadily with the ether, at first slowly, but as the patient becomes accustomed to the vapor the amount is rapidly increased, until the dropping borders on a stream. As soon as the patient is sufficiently asleep as to not respond to questions, the towel of gauze, moistened, is wrapped around the mask. The patient will pass into the unconscious state in from three to five minutes, and should be ready for the operator in about ten minutes. In my anesthetic work I am usually assisted by a graduate nurse, who is herself a competent anesthetist. It is her duty to frequently count the pulse and respirations, to keep the patient's mouth as free as possible from mucus and vomitus, if vomiting occur (and some surgeons insist upon stopping the operation and having the stomach washed out at once in such cases), and to be ready instantly to assist in combating any accidents that may arise. I endeavor now to keep the patient in surgical anesthesia until the operation is completed. The accompanying chart will explain what I mean by surgical anesthesia.





Intermittent anesthesia is wrong in principle.

Some instructors say, "Watch the pa-

I should tient, but not the operator." amend this by saying, "Watch the patient and the field of operation sufficiently to keep yourself informed as to its progress." Only in this way will it be possible, in a prolonged abdominal operation, for instance, to meet the conditions that will arise, and keep the patient steadily at a point of surgical anesthesia. Before the incision through the skin and peritoneum is made the anesthetic must be pushed somewhat. After entrance to the abdominal cavity and during intra-abdominal manipulations, if there is to be no traction on the parietal peritoneum, the number of drops is decreased to perhaps twenty or thirty to the minute. If pulling on the parietal peritoneum is to occur, as in removal of ovaries, uterus, or breaking up of adhesions, the anesthetist should be aware of it in sufficient time to increase the anesthetic before such traction actually begins.

As the accidents of chloroform and ether administration are met by practically the same methods of procedure, and as the technique of chloroform administration differs slightly from that of ether, I will, before considering such accidents and the means of combating them, take up the subject of chloroform and the proper method of giving it.

Chloroform should always be pure, and this of course applies as well to ether; and if there is any doubt about its purity, Hepps's smelling test will enlighten one. A piece of Swedish filter-paper is dipped in the chloroform and allowed to dry. there is no odor it is pure, but if there is a peculiarly sharp, irritating odor, it is not pure, and the odor is due to its at least partial decomposition into hydrochloric acid and chlorine. Contact with air or oxygen does not affect chloroform deleteriously, but light does, and bright sunlight rapidly decomposes it. In administering either chloroform or ether, the room of course should be moderately warm, about 75° F., and in both cases also all loose articles, such as false teeth, gum, etc., should be removed from the mouth. Up in my country, where there is a large Swedish population, I sometimes find it necessary to remove snuff.

In the administration of chloroform the drug must be used slowly in the beginning; and it is well to remember that more than ninety per cent of all deaths due to chloroform occur in the first stage—in fact, during the first few inhalations of the vapor. As in ether, quiet must reign supreme, the anesthetist gently reassuring the patient and suggesting sleep. The mask should not rest upon the face in the beginning, but be held an inch or more above it and slowly lowered until within a half-inch, during the first two minutes. If all goes right, and the patient breathes well, the mask may now be lowered to the face and the rate of dropping should be about two drops per second. There should be no intermission in the dropping until the patient is fully under the influence. There is a certain point at which the stage of excitement sometimes begins. The patient is very apt to hold the breath, and an anesthetist whose experience has been limited may become somewhat anxious or alarmed. It is only necessary to remove the mask, press lightly on the lower end of the sternum, and command the patient firmly to go on breathing, giving at the same time a breath or two of air minus the chloroform. When respiration is regular, continue the anesthetic. If one loses too much time at this point the patient may become very much excited (alcoholics especially), but if one is careful to give just the right amount of chloroform the excitement is usually of short duration or entirely avoided. If the patient attempts to vomit do not stop the anesthetic unless the stomach contents actually come up into the throat. Should they do so they must be quickly cleaned out with gauze wrapped around the finger or a pledget seized in a pair of curved forceps.

When the operation is begun the amount of chloroform is of course diminished. In chloroform anesthesia it is much more important to watch the pupils than when ether is given. In the early stage the pupil becomes dilated for a minute or two, but after the patient becomes fully asleep the pupil contracts slightly beyond the normal and should remain so until the end of anesthesia. Secondary dilatation means that the chloroform is being crowded too much, and so the pupil should be frequently inspected, especially during the later stages of anesthesia. Never stick the finger in the eye to test the conjunctival reflex. Anywhere from five to twenty drops per minute is all that is usually required to keep the patient in a state of surgical anesthesia. About one ounce should be sufficient to keep the patient thoroughly asleep for one hour.

As regards accidents, two kinds happen in the administration of chloroform. That from prolonging the use of the drug too far, and occurring after the patient is altogether insensible, is rather uncommon. The more numerous class of cases occur during the early stages of administration. Of the two, the latter are the more perplexing, not to say startling. weaknesses of the heart are liable to make mischief when chloroform is given. why the heart behaves as it does is not fully known. Some new light is thrown on the problem by the researches of Dr. Embly, of Melbourne Hospital, which have been reported at length in the British Medical Journal. This expert claims that chloroform affects the heart in two different ways at once, at least in the beginning. There is partial paralysis of the heart muscle, in consequence of which the bloodpressure falls off, and sometimes there is a cessation of breathing. Simultaneously, the vagus nerve experiences a temporary excitement or irritability. This condition of things does not stimulate but depresses the heart as long as it lasts. This second effect fortunately is not as a rule lasting and gradually passes off. Only one influence then operates. The lesson which Dr. Embly draws is that great caution should be shown at the commencement. He thinks that only one per cent of the vapor breathed by the patient at the outset should come from the chloroform, and the rest should be air. Not more than five per cent of chloroform vapor should be administered at any time. I know, however, of no mechanical device for accurately measuring the amount given. One must learn from experience to give just the right amount.

Concerning shock, whether it be due to the operation or to an overdose of the anesthetic, there are two opinions. Mummery and Crile maintain that lowered arterial blood-pressure in shock is due to a dilatation of arterioles throughout the body. The splanchnic veins are enlarged, so with a diminished carotid there is a raised portal pressure. Malcolm and many others uphold the view that in shock there is a contraction of arterioles throughout the body. In shock there is no evidence of constriction passing into dilatation, such as flushing of the body surface. thready pulse, coldness and pallor of the surface, and little bleedings from wounds indicate constriction rather than dilatation of the arterioles. Mummery's definition of shock is the condition resulting from a fall in the general blood-pressure, due to exhaustion of the vasomotor centers. colm's definition would appear to be a condition resulting from a fall of systemic blood-pressure due to a general contraction of the arterial system from overstimulation of the vasomotor centers. You may take your choice of these two theories. Heart failure is not likely to occur if the respiration continues good, unless there has been an excessive loss of blood or the viscera have been exposed for a long time. If the pulse wavers, becoming decidedly weak, an intravenous injection of normal salt solution may be necessary. If death seems imminent, three or four syringefuls of ether may be injected, but only as a last resort when the situation is very urgent.

A common accident is swallowing the tongue. When this is encountered, put down bottle and mask at once and raise the chin of the patient by placing a thumb on each side of the face above the angle of the jaw and three fingers on the neck below the angle, pulling upward and forward so that the larynx will be straightened and the tongue drawn forward out

of the pharynx. Never use a tongue forceps if it is possible to avoid it. When the case is extreme, wrap a finger hastily with gauze, insert it into the throat, and unroll the tongue.

Stoppage of respiration is perhaps the most dangerous of accidents, when chloroform is given. When too much has been given the patient turns livid from imperfect oxidation and ceases breathing. Artificial respiration must at once be begun, the head lowered and jaw raised. Vomiting sometimes gives one considerable trouble, if the patient has eaten within six or eight hours of the operation. When it occurs the head should be turned to one side and the shoulder raised so as to permit of ejection of stomach contents. The use of adrenalin subcutaneously, in shock, has the sanction of most surgeons. Crile, however, says that adrenalin is of no benefit unless used intravenously. Strychnine is now being condemned by some, on the principle that a jaded horse should not be goaded. I can only say that we must still, in a measure, follow the dictates of experience, and that both are being used hypodermically by most operators. If the patient becomes cyanotic, or if the operation has been prolonged, I give oxygen; and it is administered by attaching a soft catheter to the rubber tube leading from the oxygen retort by means of a glass tube, the catheter being passed through the nostril to the pharynx. This is an excellent method, as it helps to keep the tongue from falling backward and is easily kept in place, while still continuing the anesthetic. procedure is, I believe, original with Dr. Pearson, of Buffalo, N. Y.

Chloroform is more dangerous than ether, especially for the inexperienced anesthetist. It is impossible to get accurate statistics as to mortality, but it has been estimated that chloroform causes one death in about every twenty-five hundred cases, while ether causes one death in about every eight thousand. Keen says that some of the more recent experiments seem to show that the assumption that ether is more irritating than chloroform to the kidneys is

untrue. This opinion is now sustained by other investigators.

And lastly, concerning the preliminary use of morphine and atropine. Many operators are in favor of their use, because they allay fear in the beginning of the anesthesia, because the stage of excitement is almost entirely eliminated, and because extra secretion of mucus is avoided, also the tendency to nausea. These are some of the advantages claimed for their use. But others are strongly opposed to them. Dr. Kane, who has had a very extensive experience in surgery and anesthetics, objects to their preliminary use, and has very positive opinions on the subject. I asked him for his conclusions, and I give them as they were given to me:

"Morphine is dangerous chiefly because it diminishes or abolishes all reflex irritability—our last and only hope in anesthesia narcosis. It increases, in many individuals, the postoperative vomiting; it masks symptoms during operation. It increases the tendency to lung complications by producing pulmonary congestion. It prevents the patient coughing up mucus collecting in the throat during operation, and should vomiting occur, no effort can be provoked in patient to eject the vomitus, which falls back into the trachea.

"Intestinal paresis is increased by morphine; this is a serious objection in laparotomies.

"One should withhold morphine until after operation, and then be guided by conditions as to its indication or contraindication.

"Atropine checks nasal, buccal, and pharyngeal and bronchial secretion, thus rendering unprotected sensitive surfaces from the irritation of the anesthetic. There follows a reactionary secretion, a tough, tenacious mucus which increases the tendency to pneumonia. The increased surface temperature evidenced by surface congestion produces reduction of internal body temperature through radiation, thus

lowering vital activity and demanding greater strain upon the heat center. By checking sweating a strain is thrown upon the kidneys at the time they are least able to stand it.

"The hemostasis induced by atropine during operation is deceptive to the surgeon, and is followed after operation by a reactionary oozing. The tenacious mucus formed in the throat after atropine causes faucial irritation, productive of vomiting as well as annoying hawking and cough."

I have failed to find clinical evidence that atropine is a respiratory stimulant or that it lessens the tendency of morphine to cause vomiting (a medical fable). We must consider the ensemble of the entire case, and not merely an easy anesthesia. In other words, all medication, every procedure, should aim at the welfare of the patient before, during, and after the operation, and an ultimate complete success in a restoration to health.

After-treatment, in regard to ice, water, phenol and peppermint water, champagne, etc., for postanesthetic vomiting and thirst, is to be remembered. In secondary vomiting, occurring two or three days after operation, and often supposed to be due to bowel toxemia, the condition is due in 90 per cent of cases to acetonuria. Full doses of sodium bicarbonate with laxatives will usually give relief.

It is only through long experience, and almost daily practice, that the anesthetist acquires the ability to instinctively anticipate the accidents and changes in the patient's condition in time to forestall them. This he is able to do, if he is a close observer, and adapted to his work. The status, also, of the anesthetist has been changed. The surgeon no longer issues his commands gruffly, as has been the practice somewhat in the past with internes, but recognizing that the anesthetist's responsibility is next to his in importance, courtesy has taken the place of criticism, and request the place of peremptory command.

### EDITORIAL.

## QUININE HYPODERMICALLY AND TETANUS.

Within recent years we have called attention in the THERAPEUTIC GAZETTE to the fact that intramuscular injections of quinine were being largely employed by medical practitioners in India for the purpose of preventing and combating infection by the malarial parasite, the chief advantage claimed by the advocates of this method being that absorption is sure, the dose which is efficient is smaller than that commonly given by the mouth, and that the action of the drug is much more rapidly manifested. Practically all of these clinicians insist that the method is not sufficiently painful to be objectionable. For the prevention of abscess rigid antisepsis is required. The injection must be into the belly of a muscle and not in the subcutaneous tissues, since in the muscle it gives less pain, is more promptly absorbed, and abscess is less prone to occur.

Recently the bimuriate of quinine and urea has been very largely employed as a local application, and still more commonly as a hypodermic injection for the purpose of producing local anesthesia, so that minor operations could be performed without pain, the claim being made that this preparation is efficient, that it is not followed by ill effects, local or general, and, furthermore, that it possesses none of the dangers of cocaine when that drug is given hypodermically.

A number of clinical observers have reported instances of tetanus developing after major or minor operations, in cases in which no opportunity for infection by another cause than quinine could be discovered. These seemingly inexplicable infections with the bacillus have, however, been explained, in part at least, by the discovery that tetanus spores are sometimes found in the healthy alimentary canal of man, and if, perchance, there occurs a solution of continuity in the mucous membrane of the intestine, autoinfection of a traumatic or sur-

gical wound may result. Possibly this explains the development of tetanus in some cases which have been operated on for hemorrhoids, and it certainly has an interesting bearing upon the safety and value of quinine when given by the hypodermic needle, either for the purpose of producing local anesthesia or to overcome the malarial parasite.

A very interesting communication on this subject is made to the Indian Medical Gazette of Calcutta for December, 1911, by Sir David Semple, who severely criticizes an article by Major Smith, of the Indian Medical Service, contributed to the same journal for September, 1911, chiefly in respect to the danger of quinine, when given hypodermically, and as to the efficiency of small doses. In the personalities of this article we have no interest, but its practical bearings are of the greatest possible importance. First, Semple points out a fact, which we believe is not generally known, to the effect that if a solution of quinine is boiled, it undergoes deleterious change in a very short time. That this occurs is easily proved by boiling such a solution, for however clear it may be before boiling, it is usually opaque on Therefore the therapeutic efficiency of quinine is diminished by this method of sterilization. Again, Semple believes, and he seems to be correct in his view, that the period of boiling for from one to three minutes is entirely inadequate to sterilize quinine so far as tetanus spores are concerned, since, as is well known, the researches of Theobald Smith have shown that the spores of some strains of tetanus resist boiling for as long as from forty to seventy minutes. Manifestly, before this time is up the quinine will have been decomposed, and the small quantity of water in which the quinine is dissolved will have disappeared.

Experiments made by Semple upon guinea-pigs seem to prove pretty conclusively that the deterioration of quinine by boiling is not only chemical but that it materially impairs its therapeutic efficiency, because boiled quinine injected into guineapigs, in doses which were sufficient to produce death if the quinine was not boiled, fails to cause a lethal result.

Of even greater interest is the question of the relationship between quinine and the development of tetanus. It seems to be pretty well proved that quinine produces some change in the tissues which renders them a singularly favorable site for the growth of the tetanus bacillus. It is not the damage to the tissues produced by the injection, because a hypodermic injection of morphine does not produce similar results. The point is, therefore, not so much that the quinine solution actually contains tetanus bacilli, but rather that the quinine predisposes to infection if the germ is present in the body. That the quinine does increase the susceptibility of the tissues to this form of infection seems to be proved by some of Semple's experiments, although it also seems to be proved that 'quinine itself acts deleteriously upon this organism.

So far as the rapid absorption of quinine from the tissues is concerned, Semple asserts that autopsies have frequently revealed the salt unabsorbed in the tissues where it was deposited by the needle.

Notwithstanding these somewhat alarming propositions advanced by Semple, it is only fair to recall the fact that tetanus following the injection of quinine must be an exceedingly rare occurrence, since there are almost no reports concerning it in the medical literature which deals with this use of quinine in the temperate zone. Indeed, in India, where tetanus is more prevalent, this accident following an injection of quinine is not commonly met with. It will be interesting to note whether the wide-spread use of quinine hypodermically as a local anesthetic results in such cases being reported in America.

Concerning the question as to whether the physician should resort to quinine by the hypodermic needle in malarial fever, we think that the answer is that this plan

should be avoided unless the need for the immediate action of quinine is pressing. Perhaps, after all, Sir David's statement in regard to this matter represents the position which clinicians should generally hold, when he says: "I should certainly not recommend any one to withhold a hypodermic injection of quinine from any case where it is indicated, but, on the other hand, I should be very sorry to recommend this method of quinine as a routine measure in all cases. I should confine myself to the exceptional cases in which quinine by this method is indicated, and these I should safeguard by a dose of tetanus antitoxin. especially in those localities of tropical countries where tetanus frequently occurs."

## THE EFFICIENCY OF URINARY ANTISEPTICS.

One of the advances made in therapeutics during the last two decades has been the introduction into medicine of one or more substances which comparatively harmless to the body of the patient nevertheless inhibit the growth of pathogenic organisms which may have invaded that body. The most important of these, aside from the specific remedy, salvarsan, is without doubt hexamethylenamin, commonly called urotropin or uritone. Considerable divergence of opinion has existed as to the manner in which it acts as an antiseptic in the genito-urinary tract. It is commonly believed that the drug is decomposed in the kidneys, or in the urine as soon as it is excreted, and that formaldehyde is set free, which acts as formaldehyde, or combines with any sodium which may be present forming a sodium compound. Cammidge asserted that he failed to find formaldehyde in the urine, and reached the conclusion that the antiseptic effects were produced in some other manner, but his results have not been generally accepted. Perhaps the best summary which has been made of this subject is that of Guiard, which was published in the Annales des Maladies Génito-urinaires in 1905.

The most recent investigation on this subject with which we are familiar is one which has been reported by Jordan in the Proceedings of the Royal Society of Medicine in the section devoted to Therapeutics. The doses that he employed were 10 grains three times a day either alone or in conjunction with acid sodium phosphate or potassium citrate. He found when pathogenic organisms were present that the disinfectant or germicidal influence of urotropin amounted to little or nothing if the urine was alkaline or faintly acid, but became very powerful if the urine was rendered distinctly acid by the simultaneous administration of acid sodium phosphate. Conversely, that the simultaneous use of potassium citrate, whereby the urine was made alkaline, diminished the antiseptic power of urotropin. It would seem probable, however, that this rule does not apply to those cases in which the colon bacillus is the cause of the genito-urinary infection. Indeed, it is possible that urotropin does best in this infection when the urine is alkaline, possibly because an alkaline urine is less favorable to the growth of the colon bacillus than is the urine with an acid For many years it has been known to practical therapeutists that urotropin does best in cases of vesical irritation and inflammation, not dependent upon distinct infection, when the urine is alkaline and loaded with phosphates, since it tends to make the urine acid; and, conversely, it may increase bladder irritability if the urine is excessively acid. The conclusion to be drawn would seem to be that it is important in the treatment of these cases, first, to determine whether the trouble is dependent upon the presence of an infecting organism, then to determine the reaction of the urine, and if it be alkaline to administer acid sodium phosphate, or perchance bitartrate of potash, to increase the urinary acidity if ordinary pathogenic germs are present.

In regard to the influence of other so-

called urinary antiseptics Jordan states that sandalwood oil, which is partly excreted unchanged and partly as a compound of glycuronic acid, has been considered by some as an antiseptic, while others have regarded it as an astringent to the genitourinary mucous membrane. Jordan believes that this so-called astringent influence is purely imaginary, since none of the essential oils possess such powers. found that against the microorganisms of putrefaction its action is feeble, and when the urine is alkaline when it is administered putrefaction occurred as rapidly as if it were not given. When the urine is acid it diminishes the development of putrefaction one-half, but does not stop it entirely. He also found that the colon bacillus is unaffected in all instances when sandalwood oil is given; whereas, if the staphylococcus is the microörganism involved, it acts as a powerful antiseptic, delaying the growth of this organism to six or seven times the normal period. In moderately acid urine ammoniacal change does not develop for nine days, and in highly acid urine microorganisms are scarcely growing at the end of a fortnight. In other words, sandalwood oil, although an antiseptic, so far as the staphylococcus is concerned, is of little value against the bacillus coli or the organisms of putrefaction.

Concerning the influence of salicylic acid, given in doses of 20 grains three times a day, he found that it distinctly delays putrefaction so that ammoniacal fermentation does not occur until three times the period in which it ordinarily ensues. It seems to slightly inhibit the growth of the staphylococcus and of the bacillus coli, but at no time has it been seen that its action is very positive.

Concerning the influence of benzoic acid and ammonium benzoate, Jordan found that there is an increase in the antiseptic power if the urine is highly acid, but he questions whether this result is not due more to the acidity than to the influence of the drug. Jordan believes that 10 grains three times a day is adequate to produce an

effect, and that larger doses are practically useless.

In the discussion of Jordan's paper Sachs brought forward the question as to whether the seeming effect of urinary antiseptics upon the bacillus coli in alkaline urine was not due rather to the reaction of the urine than to the drug. In other words, he thought that alkaline urine was unfavorable to the growth of bacillus coli. Jordan controverted this view by the assertion that bacillus coli grows in alkaline urine very well. On the other hand, he is forced to admit that the administration of potassium citrate often does good when the colon bacillus is present. He thinks it a mistake, however, in these cases to give urotropin at the same time, as he believes that these drugs, whatever their isolated effect may be, do not act on the colon bacillus if given together. He also brought forward the point that occasionally it was wise to change the urinary antiseptic used, since it seemed at times that the organism became accustomed to one drug, and the change produces a good effect by exercising a new influence.

#### ACUTE ARTHRITIS.

The development of bacterial research is showing us more and more that, in the majority of instances, acute inflammation of the joints is due to one or more infecting microörganisms, and that rheumatism in the sense of acute articular rheumatism. which years ago was credited as a cause of every arthritis, is present far less frequently than some of us imagine even at this late day. Indeed, it is wise, as a rule, to approach the case of single or multiple arthritis from the standpoint that it is not acute rheumatism, since by this means we will prevent ourselves from overlooking other causes of joint inflammation which are much more serious in their results. Joints infected by the gonococcus, the pneumococcus, and the various forms of ordinary pus-producing organisms are by

no means rare, and if they are not speedily treated in a correct manner may result in destruction of the joint. Hale White has contributed an interesting clinical lecture on this subject to the Clinical Journal of February 21, 1912. He points out that in gonorrheal arthritis the onset may be quite as sharp and acute as in ordinary articular rheumatism, and that such an arthritis may develop in men and women whose morals seem to be entirely beyond reproach. We should not forget that osteomyelitis is not rarely mistaken for acute articular rheumatism, for this mistake leads to the loss of the limb, and not infrequently to the loss of life. Such conditions demand surgical interference, and not the persistent and blind administration of the salicylates on the ground that the patient is rheumatic.

In connection with gonorrheal rheumatism it is important to remember that the ordinary paths of entrance for the gonococcus are not necessarily infected, as gonorrheal arthritis may develop from a gonorrheal ophthalmia, and even in ophthalmia neonatorum. In some instances, too, an acute infection by the pneumococcus attacks the joints first and the lung afterward, which is not surprising when we remember that pneumonia is really a systemic disease, although its most common local manifestation is in the lung.

# TREATMENT OF STAB WOUNDS OF THE THORAX.

Concerning this question there is by no means a united opinion on the part of clinical surgeons. Perhaps the majority favor conservatism unless there be continued or recurring bleeding and evident involvement of the diaphragm or abdominal contents or infection, the latter being the main cause of death in cases which survive the immediate effects of trauma.

Lawrow (Beitrage zur Klinischen Chirurgie, 76 Bd., 3 H., 1911) on the basis of 257 cases observed in the years 1905 to 1909 inclusive concludes that in the great

majority of penetrating wounds of the chest, the diaphragm and abdominal organs, the heart and pericardium and the blood-vessels of the thorax are involved, all these complications calling for immediate treatment.

In 155 cases operated upon, 78 per cent exhibited lesions of the inner organs: diaphragm, 35.4 per cent; heart and pericardium, 9 per cent; lungs, 27.7 per cent; and the vessels of the thoracic wall, 6.4 per cent. Lesions of the mediastinum and isolated pleural lesions were observed in 22 per cent.

Lawrow holds that every case of stab wound seen within twelve hours of its infliction, with the exception of those in the region of the shoulder-blade and between the scapulas, should be carefully enlarged and deepened in order to determine whether there are visceral complications. Even in the excepted cases operation is indicated in the presence of urgent symptoms, such as bleeding, pneumothorax, and evidences of peritoneal involvement. The purpose of enlarging the external wound is not primarily and principally to find and close a wound of the lung, but rather to determine whether or not the diaphragm, the heart, or the pericardium has been injured, since a failure to recognize such lesions may lead to most serious consequences, and exact diagnosis without exploration is impossible. The suture of a wounded lung is of distinctly secondary importance. From the standpoint of the extreme sensitiveness of the pleura to infection, the most rigid asepsis is indicated.

Lawrow gives certain mortality figures which he particularly states are not to be compared one with the other, since the cases selected for conservative and for operative treatment are widely different. In upwards of the two hundred and fifty cases observed the mortality of those operated upon was 36.7 per cent; of those not operated upon, 14.7 per cent.

It is evident that no rule of general application can be laid down concerning the management of these cases. Except when

the conditions are most favorable for absolute cleanliness, and when a surgeon of some experience in thoracic surgery is available, it is probable that a conservative treatment will give the best results in the absence of continued hemorrhage or evidences of complicating intra-abdominal injury with extravasation of intestinal contents.

## THE TREATMENT OF TRAUMATIC ANEURISM.

The work of Matas upon the treatment of aneurism, based on a careful pathological and experimental study and amply confirmed by a large clinical experience at his own hands and at those of many operators, has, in its findings, now received general acceptation. His methods are probably employed in every modern hospital, with a marked lessening of the percentages of failure and of gangrene, which were distressingly high after the older forms of surgical intervention.

It is interesting to note in this relation a report of traumatic aneurisms and their surgical treatment as observed in the course of the Russo-Japanese war and thereafter. Herzen (quoted in Journal de Chirurgie, December, 1911) records in all over 130 of these lesions, and makes the general statement that in case of gunshot wound of blood-vessels, barring the immediate indication for checking hemorrhage, formal intervention is contraindicated. When aneurism develops he believes that the best time for intervention is about six weeks after the primary injury.

For the treatment of arterial aneurisms he prefers ablation of the sac, particularly cautioning in regard to cleanliness, since infection, by preventing collateral circulation, almost certainly will prevent favorable results. Moreover, he commends the ligation of the corresponding vein at the time that the artery is secured.

Of the aneurisms observed the greatest number involved the femoral artery. Thereafter follow the brachial, the popliteal, the axillary, the common carotid, and the profunda femoris.

As to the results, there were 21 cases subjected to non-operative treatment; of these four were cured, nine were bettered, six were not improved, and two died. Twenty cases were subjected to ligation in continuity at a distance from the aneurism; of these 13 were bettered, one was not improved, three suffered from gangrene, and three died. Sixteen were ligated just above the aneurism: thirteen of these were cured, one was bettered, and one died. A double ligature was applied to eight; five were cured, two were bettered, and one died. Twelve were subjected to intrasaccular ligation with resection of the artery; seven were cured, two developed gangrene, and three died. In 31 the sac was resected; 25 were cured, five exhibited gangrene, and one died. Three were sutured; one was cured, one developed gangrene, and one died. Of arteriovenous aneurisms there were 75, the greater number involving the femoral and popliteal. The operation practiced was a cleanly resection. Attention is called to the fact that these arteriovenous aneurisms sometimes recover spontaneously and that they may last for many years without producing much trouble, this being particularly true of the axillary vessels. Of these arteriovenous aneurisms 32 were resected, with 28 cures, three gangrenes, and one death. Four were sutured, with one cure, two gangrenes, and one death.

It is suggested both by Herzen's clinical reports and by his results that he is not familiar with the more recent work on

vascular surgery. It is generally accepted and has been abundantly proven by clinical experience that simultaneous occlusion of both an artery and a vein is far more likely to be followed by gangrene than when an artery alone is occluded. simple venous closure is practically without danger in so far as death of peripheral parts is concerned. Until the possibilities of conservative work were enlarged by the development of vascular suture it was the general practice upon the part of experienced surgeons when, for instance, the popliteal vein and artery were both wounded to practice an immediate amputation.

To one who has ever practiced both methods the superiority of Matas's intravascular suture for the obliteration of an aneurismal sac over the removal of the sac by dissection, both from the standpoint of ease of performance and safety in results, is convincing. By this method the integrity of the vein is not endangered. The removal of the sac by dissection, even when done by most skilful hands, is always tedious and is extremely likely to so injure the vein that its ligature or suture is called for. In many cases, by Matas's method of suture, the sac may be obliterated and the continuity of the arterial circulation may be maintained, unless clots subsequently form from rough manipulation or preexisting disease; thus entirely avoiding the risk of gangrene. The suture is equally applicable to the arteriovenous aneurisms, and indeed other methods are rarely required unless the aneurism be so placed that control of hemorrhage during arteriorrhaphy is impossible.



### REPORTS ON THERAPEUTIC PROGRESS.

### HYPOADRENIA AS A CAUSE OF DEATH IN INFECTIONS AND ITS TREATMENT.

SATOUS, in the Monthly Cyclopedia and Medical Bulletin for December, 1911, states that if at the end of an infectious disease the case, instead of proceeding to convalescence, remains in a condition of asthenia, with low blood-pressure and temperature, there is good ground for the conclusion that terminal hypoadrenia has occurred. Exhaustion of the adrenals during the acute process having inhibited their secretory activity, the above symptoms result from inadequate oxidation of, and metabolic activity in, the tissues. white line may be obtained in the majority of these cases. It is elicited by gently rubbing the finger in a narrow line over any part of the abdomen. After a short period the area becomes whitish, and remains so The patient complains of a short time. chilliness; the surface is pale, owing to the poverty of the blood in cellular elements and hemoglobin and to recession of the blood-mass from the surface to the deeper vascular trunks. The vascular tension being low, the pulse is rapid and the heartbeat weak. Anorexia due to deficient metabolism and diminished food intake. nausea the result of relaxation of the gastric muscular coat, and diarrhea due to a similar condition of the muscular coat of the (already passively engorged) intestine, more or less frequent fainting spells, are all concomitant symptoms that may be witnessed in such cases, which are always greatly exposed to relapse or to sudden death from heart failure.

Complications of various kinds may occur, the immunizing processes being greatly weakened through the deficiency of adrenal secretion, one of their important factors. Septic infection, abscesses, bone lesions, tuberculosis of a rapid type, and other infections may develop more or less rapidly. Disorders of nutrition, cholelithiasis, and occasionally Addison's disease

may also appear. In acute pulmonary infections, pneumonia, for example, structures in the neighborhood of the focus of infection, the pleura, the heart, etc., inadequately protected by the blood and its phagocytic cells, become the prey of specific bacteria. Briefly, the body is rendered vulnerable to the attacks of almost any pathogenic organism.

In this particular disturbance, opotherapy, or rather the use of adrenal gland, or of pituitary body-which acts very similarly, but with less violence and more lasting effects—sometimes gives surprising results. The adrenal product—which from the author's view-point is also the main active agent in the neural lobe of the pituitary, as shown by the chromaffin test-insures precisely what the body needs, viz., the resumption of all oxidation processes, and also, therefore, general metabolism and nu-This in turn creates a rise of blood-pressure, which causes the blood to circulate in all organs, including the skin, and in the adrenals themselves. Indirect effects are also obtained: The action of the adrenal principle on the heart increases the contractile power of this organ, and since it is thus rendered capable of projecting the blood with greater vigor through the lungs, oxygenation of the blood becomes more perfect. Recovery is also materially aided by the rise of blood-pressure which the adrenal product insures, and which causes arterial blood to be driven from the splanchnic area toward the peripheral organs, including the lungs and brain. From these features alone considerable benefit is derived. If we recall, moreover, the participation of the adrenal secretion (which the adrenal preparation administered represents) in the immunizing process, we have the added factors of ridding the blood of any intermediate—and, therefore, toxic wastes, bacterial toxins, etc., it may contain, and of increasing phagocytic activity, thus antagonizing efficiently any pathogenic organism that may remain to compromise

the issue. Thus explained, we can understand the phrase "little short of marvelous" applied to the results obtained by some clinicians. We can also understand the marked reduction in the mortality obtained by Hoddick in cases of peritonitis following appendicitis accompanied by uncontrollable decline of the blood-pressure, cyanosis, and other evidences of collapse, and also in puerperal toxemias, by the slow intravenous use of adrenalin in saline solution.

Hoddick ascribes the lowering of the blood-pressure to paralysis of the vasomotor center: but as the toxemia is the cause of this condition, an agent capable of counteracting both cause and effect is necessary. This is met by the adrenal principle. Josué, in typhoid fever, likewise relieved threatening symptoms by injecting 15 minims (1 Cc.) of adrenalin (1:1000 solution) in 1/2 to 1 pint (250 to 500 Cc.) of physiological saline solution subcutaneously. The influence of the saline solution in these cases must not be overlooked, however. Eight years ago the author urged that death was often due, in infectious and septic diseases. to the fact that the osmotic properties of the blood became deficient, and advised the use of saline solution from the onset of the disease. The reduction in the mortality of pneumonia in the practice of men who have carried out this suggestion has demonstrated its value. Netter has used much larger doses of the adrenal active principle with profit. Marran and Darré found it of great value in the collapse of diphtheria with marked asthenia, low bloodpressure, and subnormal temperature. Moizard recommends adrenal organotherapy as soon as asthenia and low bloodpressure occur in any infection. He gives daily two fresh adrenals from the sheep, finely divided and mixed with powdered sugar, or administers the active principle, 10 to 20 drops daily divided into five or six doses. Kirchheim has found large doses-10 to 24 minims—safe hypodermically in the collapse of pneumonia, diphtheria, and scarlet fever. Letulle has found the principle of great value in the latter disease.

The better plan, from the author's view-point, is to inject it with saline solution (at 108° F.) intravenously, the needle of the syringe containing the adrenalin being inserted into the rubber tube of the saline solution apparatus.

These measures are only indicated in emergency cases, however. In the average case the glandulæ suprarenales siccæ of the United States Pharmacopæia, administered by the mouth, are fully as effective, if a good preparation is obtained, as soon as asthenia and low blood-pressure appear. The powder in 3-grain (0.2 Gm.) doses three times daily in capsules, gradually increased until 5 grains are given at each dose, usually suffices. When the cardiac advnamia disappears, a small dose of thyroid, the desiccated gland, ½ grain (0.03 Gm.), added to each capsule greatly hastens con-The iron and the adrenal valescence. product serve jointly to build up the hemoglobin molecule, a slow process when left to itself.

For our knowledge of the action and use of pituitary extracts in infectious diseases we are mainly indebted to L. Rénon and Delille, who began their use in 1907. In a recent work in which the clinical observations of both observers are recorded Delille, referring to grave cases of typhoid fever, states that they showed "arterial hypotension, irregularity of the pulse (especially the grave forms), oliguria, insomnia; while convalescents showed asthenia, hypotension, or at least 'effort hypotension' (Oddo and M. Achard), paroxysmal or continuous tachycardia"-all, we have seen, symptoms of hypoadrenia or adrenal in-They found 11/2 grains of sufficiency. pituitary extract (of both lobes), at noon daily, extremely efficient. It counteracted at once the depressed arterial tension, produced diuresis, overcame insomnia, and greatly improved the general condition. Similar effects were observed in diphtheria and ervsipelas. The results in pneumonia do not appear to warrant the use of any adrenal or pituitary preparations early in the case—the first few days of the disease, when the blood-pressure and the fever are

high. They should be used only when a low blood-pressure and other symptoms of hypoadrenia are present. The results reported by Delille strengthen this opinion. In advanced tuberculosis no beneficial effect was observed.

### THE DETERMINATION OF INDIVID-UAL DOSAGE IN TUBERCULIN THERAPY.

WHITE and VAN NORMAN in the Archives of Internal Medicine of January 19, 1912, reach the following conclusions:

- 1. It is possible by testing the sensitiveness to tuberculin of the surface cells of a tuberculous patient to determine the quantity of tuberculin which, when given subcutaneously, will produce a certain grade of reaction.
- 2. It is possible to obtain the same grade of reaction in any given number of patients, even though the quantity of tuberculin to produce this reaction varies and the condition of the patient varies.
- 3. The variation in the quantity of tuberculin necessary to produce the same grade of reaction in all cases is one hundred times.
- 4. It is not possible to determine by the extent of disease, age, or condition of the patient the principle underlying this variation.
- 5. The administration of tuberculin in doses which produce these mild (local) reactions has given the best results of any method of tuberculin therapy which they have used.

## THE PURIN CONTENT OF COMMON ARTICLES OF FOOD.

ARNOLD and LARRABEE in the Journal of the American Medical Association of January 6, 1912, remind us that exogenous purins come essentially from two sourcesfrom the nuclei of cells in the food, and from free purins (chiefly hypoxanthin) found in muscular tissue. The chief sources are animal foods, and these are rich in purins in proportion to the number of nuclei in a given amount of the tissue. For ex-

ample, glandular organs are much richer than muscle.

Of animal foods, milk and eggs, and all articles made from them, are essentially purin-free. Fish eggs are included in this list. Cheese may include an appreciable amount of purin, if rich in bacteria.

Usually all vegetables are permissible, being practically purin-free. Seeds, however, contain a certain amount of purins in the plant embryos. In extreme cases, therefore, the use of peas, beans, corn, wheat, and oats may need to be restricted or even excluded. It should be noted, however, that such objections as there may be to these seeds do not apply to flours made from them, for the process of bolting the flour removes the plant embryos.

In this connection caffeine and theobromine may be mentioned. Each contains a form of purin, but they are methyl-purins. The methyl radical is much the more active, and the amounts of these substances taken would be limited by the methyl action long before the action of the purins would become objectionable. These purins may be practically disregarded in our consideration of the subject.

These, as we have seen, are chiefly animal foods containing cells, and they are rich in proportion to the number of cells in a given amount of food.

Our knowledge of the purins and the rôle they play in the body is not sufficiently accurate to make it worth while to try to calculate the exact amount taken in a given quantity of food, so that the exact percentage has little practical value. On the other hand, the relative amount in different foods has a practical value. This can be expressed conveniently by taking as a unit the amount of purins in a given weight of any food that is relatively poor in purins, and then classifying other foods as containing multiples of that unit.

A satisfactory method is to compare the foods according to the number of grammes of purins in a kilogramme of the food. Cod may be taken as the standard to determine our unit. Their figures are taken from I. Walker Hall. There are 0.582 of

purins in 1 kg. of cod, so that our unit may be placed at 0.5 gm. per kilo. The common foods will be classed in groups having approximately the same amount of purins, and in each group they will be arranged from above down, beginning with the lowest of the group and ending with the highest.

It will be noted that there is no difference chemically between the "red" and the "white" meats. Also note that while the common forms of white fish like cod are low in purins, other fish, like halibut and salmon, are as rich as the common meats.

	Purin Content of Animal Foods.		
1 unit.	Tripe.	21/2 units.	Turkey.
	COD.		Chicken.
			Beef (sirloin).
1½ units.	Plaice.		
		4 units.	Beefsteak.
2 units.	Mutton.		•
	Rabbit.		
	Halibut.		
	Pork.	6 units.	Liver.
	Beef (ribs).		
	Ham.		
	Veal.	20 units.	Sweetbreads
	Salmon.		(thymus).

Purin Content of Vegetable Foods (containing more than a trace).

 Two-fifths unit
 Asparagus

 Four-fifths unit
 Pea-meal

 One unit
 Oatmeal

 Six-fifths unit
 Beans

Sweetbreads and liver must be omitted from the diet entirely whenever it is desired to limit the amount of purins ingested, and beefsteak should be used in only half the amounts that other meats are allowed. Boiling meats reduces the amount of purins, as it removes a good deal of the soluble xanthin bases, whereas these are all retained when the meat is broiled.

The method of dealing with a patient who needs to have the purins restricted would be, first, to put the patient on a purinfree diet of milk, eggs, bread, and vegetables for a number of days, in order that he may rid his system of any excess of purins that are retained in the system. Then we may test his tolerance by beginning with an allowance once a day of a moderate serving of one of the articles from the table above that is rather poor in purin—that is, an article that relatively has not more than two cod units. The amount should not exceed 100 grammes. If these

lower substances are well borne, then we may try the stronger ones, but we should begin with smaller amounts, not over 50 grammes at the start. These stronger articles should not be put on the regular bill of fare, but only allowed occasionally, even if there are no apparent symptoms from their occasional use.

A good word may be added about beverages. Tea and coffee may be used in moderation, if not otherwise objectionable. In general, alcohol inhibits purin metabolism. This is the objection to alcoholic drinks, rather than any question of their purin content. Beer, ale, and porter contain small amounts of purin. Spirits contain none. Light wines usually agree best with gouty patients, but there is no definite rule as to the way in which gouty patients are affected by different alcoholic drinks.

One final word of caution should be added. Gout is a variable disease. Each case has its idiosyncrasies and its peculiar problems. Treatment must be individualized, and the general principles laid down may need considerable modification to meet these individual requirements. Nevertheless, the intelligent regulation of the diet so as to meet the needs of the body for nutrition and yet to limit the amount of purin ingested will remain a cardinal principle of treatment.

## THE TREATMENT OF INTESTINAL AMEBIASIS.

Musgrave in the Journal of the American Medical Association of January 6, 1912, states that local treatment by bowel irrigation, either alone or combined with some other form of medication, gives the most satisfactory results in the majority of cases of amebiasis. To secure the maximum of efficiency this form of therapeutics requires special attention to certain details, particularly to (a) the manner and time of giving the enema; (b) the solution to be used.

In former publications the author has recommended the use of the long rectal tube to be employed with the patient in the left lateral (Sims) position. The experimental work of a number of investigators

has proved the futility of trying to pass a long rectal tube through the sigmoid colon, and the same line of experiments, of showing the course of rectal tubes and fluids introduced by them by radiographic work with bismuth emulsions, has shown conclusively that no such special effort is required in order to get enemas to reach all parts of the large bowel from rectum to cecum. Indeed, it has been shown that the entire large bowel is easy of access by any form of enema provided sufficient quantity of fluid is used. In view of these results. the long one- and two-meter rectal tubes. formerly recommended and generally used in Manila, have been practically abandoned for the ordinary large-sized male rubber catheter which may be attached to an ordinary two- or three-liter irrigator, preferably made of glass.

In order to secure the best results from any form of rectal medication, the bowel must be distended by substances employed. This object may be accomplished by using large amounts of fluid, and the result is materially influenced by the position of the patient and to a less extent by the condition of the lumen of the bowel at the time of the treatment.

The bowel capacity varies greatly in different individuals, owing to variations in actual size of the organ and particularly to its resistance to the introduction of foreign substances. Ordinarily, with proper care, from two to three liters of fluid may be used, but in many instances, particularly in women, as much as four liters of fluid may be introduced without any special discomfort to the patient. In those cases in which less than two liters of fluid can be taken, the condition may be assumed to be due to contraction of the bowel wall, and if the best results are to be obtained special preparatory treatment looking to an amelioration of the influence must be employed. Such treatment consists in a preliminary washing of the bowel, the use of sedatives, as opium in some form, or what is simpler and frequently sufficient where there are no special contraindications, the administration of 25 to 30 Cc. of brandy by mouth, ten or fifteen

minutes before giving the enema. Alcohol is much less objectionable for this purpose than is opium, because of the repetition which may be necessary with each treatment until a tolerance for the enema is established, as is sure to occur under favorable conditions.

Since the appearance of Meltzer's and Shaklee's work on the physiological action of magnesium sulphate on peristalsis, this substance has been employed for the above purpose in 15- and 20-gramme doses given four to six hours before the enema, with very encouraging results. The knee-chest position undoubtedly is the best one for any form of medicated enema. The physiologic reasons for this statement are obvious. and experience has shown that in the great majority of cases a larger quantity of fluid may be taken in this manner than in the Sims position, and that it is retained with greater comfort to the patient. The only objections to the method are esthetic ones, and as patients, particularly women patients, rarely require assistance in taking such enemas after a single instruction, this objection becomes of minor importance. The bath-room floor with the patient stripped and a bath towel under knees and chest is a most satisfactory place for this treatment because of the privacy and convenience to both toilet and water; this method is one now largely practiced in Manila.

Enemas should not be given during digestion because the reversed peristalsis usually set up by such treatment interferes with the process of digestion and may aggravate stomach symptoms already present in this disease.

A very good time to take the treatment is just before retiring at night and the first thing after waking in the morning. One enema each twenty-four hours usually will be found sufficient, but in many instances two a day will give quicker and more satisfactory results. More than two treatments of this character in twenty-four hours are never indicated.

A large variety of chemicals selected largely because of their supposed amebacidal properties have been used in the local treatment of amebiasis. As a matter of fact, very few of them are endowed with appreciable amebacidal properties, and it is an open question whether or not whatever virtue the most successful ones may have is due to their amebacidal properties.

Of the list of such substances, thymol, quinine, and silver nitrate are the three which have been proved to be of greatest value.

Thymol is by far the most efficient of the known amebacidal agents, and it has been Musgrave's main reliance in the treatment of amebiasis since its antiparasitic properties were so thoroughly demonstrated by J. B. Thomas. On account of the difficulty in getting the drug in solution in water, the following formula has been worked out and has proved to be very convenient and satisfactory.

Thymol, 25 Gm. or Cc.; Alcohol, Glycerin, ää 250 Gm. or Cc.

M. et Sig.: Add 10 Cc. to each liter of water used in enema.

This gives a finished product of approximately 1-to-2000 solution of the drug, which, when the additional dilution formed by the bowel contents is considered, brings the actual intraintestinal solution well within the antiprotozoal limits of the drug, which is very actively amebacidal in 1-to-10,000 solution.

There does not appear to be any particular choice between the various quinine salts. The bisulphate is freely soluble and well adapted for use. The drug may be used in 1-to-1000 to 1-to-500 aqueous solution, depending on the irritability of the bowel. One of the principal objections to quinine is the constitutional effects often produced by its absorption from the bowel, particularly in patients who are able to retain enemas for considerable lengths of time.

Nitrate of silver frequently proves of decided benefit in solutions of from 0.1 to 1 per cent in distilled water.

The method of action of these and various other substances frequently used in colonic lavage is not understood. Formerly the amebacidal properties were consid-

ered the most important, but careful consideration of the morbid anatomy of the disease makes this hypothesis a very doubtful one.

The parasites which are intimately associated with the lesions, and which therefore may be considered the most dangerous ones, are so buried in the tissues that there seems little likelihood of their contact with the solutions injected. These lesions are constantly discharging millions of amebæ into the lumen of the bowel, and amebacidal substances may destroy these and prevent their forming new lesions. It seems rational, however, to consider the intestinal reaction due to irritation of the bowel by the solutions as being probably more important than any direct antiparasitic property of the chemicals.

The effect of acute inflammatory conditions of the bowel on the chronic amebic process has been indicated above, and it is probable that much of the good of the local treatment, of whatever character, is in its irritating influence and consequent altered blood-supply on the mucosa of the colon. Practically all the substances of proved value in local treatment are irritants, and it is a generally recognized therapeutic fact that the prognosis of the disease is more favorable in irritable bowels than in the kind in which the enemas cause little or no pain or discomfort to the patient. Tuttle's ice-water injection often gives excellent results in the disease, but is seldom used because of the intense pain frequently produced by the severe reaction in the intestinal wall.

As is to be expected from the chronic nature and the lack of a definite specific cure for the disease, numerous so-called specifics and especially efficient methods of treatment have been proposed from time to time. Of these may be mentioned the saline treatment, the simaruba treatment, the bismuth treatment, tannin preparations of various kinds, calomel, metallic mercury, various crude tropical plants, and several patent medicines which have secured considerable indorsement.

Some of the well-known chemicals of this

list are of value in special conditions, but probably none of them are in any sense specifics, and all the rest of the remedies are useless or dangerous in the treatment of disease.

The effect of mercury salts in the treatment of amebiasis deserves further investigation. During the last year the writer has had most encouraging results from the use of the protoiodide of mercury in old sluggish diarrheal types of the disease which reacted slowly to other methods of treatment.

The drug was administered just as it would be in syphilis; tablets of 0.015 gramme each were given from two to four times a day, the quantity being determined by the tolerance of the patient, the symptoms of intestinal irritation being controlled by small doses of paregoric when necessary and the drug pushed to the point of tolerance as determined by the mouth symptoms. This treatment should be continued for one to three or more months with occasional intermissions of a few days.

### GONORRHEAL RHEUMATISM.

MURRELL in the London Practitioner for Tanuary, 1912, has this to say as to treatment: The ordinary medical treatment of -gonococcic arthritis, apart from efforts to -arrest the urethral discharge, leaves much to be desired. The cases are rarely sufficiently acute to call for antiphlogistic remedies. Salicylate of sodium, salol, salicin, aspirin, and members of that group are useless. Iodide of potassium is a survival of the days when no distinction was made between gonorrhea and syphilis. Quinine and arsenic are equally without The ammoniated tincture of ·value. guaiacum does good in chronic rheumatism, but is inefficacious in the disease now under consideration. Local applications, mostly of the nature of counter-irritants, give relief to pain, especially when only one joint is affected. Cupping, blistering, and strapping are of value. Liniments containing aconite and belladonna or oil of eucalyptus, oil of cajuput, oil of camphor with saturated solution of soap in ether are popular remedies. A good local application consists of crude oil of camphor, oil of wintergreen, cajuput oil, and oil of mustard. F. Norman obtained good results with emplastrum ammoniaci cum hydrargyro. Another good plan is to frequently paint the joint with iodine until the skin is as thick as leather. Hot baths containing salts and various aromatic substances may be regarded as palliative rather than as curative agents.

The real treatment of the disease must be on other lines. For a long time the author made observations with antigonococcic sera in a considerable number of cases. He gave the serum in a series of 25 Cc. spread over twenty-four hours: 10 Cc. at 10 A.M., 5 Cc. in the evening, and 10 Cc. on the following morning. In some cases there was a reaction, indicated by a rise of temperature of a couple of degrees, accompanied by slight constitutional disturbance. Ervthema and urticaria were noticed in several instances. When there was reason for suspecting a mixed infection a polyvalent antistreptococcic serum was employed. The results obtained by this method of treatment were not strikingly successful. He asserts he is not surprised, for antigonococcic serum is usually prepared by injecting the virus into horses, and we know that the gonococcus is a strictly human parasite and is nonpathogenic in other animals. An attempt has been made to prepare the serum from monkeys, but with little success. Inoculation of pure cultures into the urethra of the ape produced no effect, and this was also the case with true gonorrheal secretions. This absence of susceptibility to gonococcic infection may be due to the presence of natural antibodies to the organisms against which the animal is immune. Whatever may be the explanation the fact remains that the serum treatment of this form of arthritis is not a success. It is conceivable that in streptococcic cases it may do good, and it is probable that in such cases only is a reaction obtained.

The only effective method of treating gonococcic arthritis is by vaccine therapy, and that with certain reservations. ordinary stock gonococcic vaccine is of very little value. The author recently observed a man who for many weeks had been treated on these lines without benefit. the explanation being that his gonococci had long since disappeared and had been replaced by a diphtheroid bacillus, which was the cause of the mischief. Somewhat better results are obtained by vaccine prepared from a recent alien gonococcic urethritis, but even that leaves much to be desired. These vaccines are usually composed of several strains, but the author is not in favor of this particular form of polypharmacy. As far as possible he discards alien vaccines and uses only autovaccines, for the antidote from the patient himself is of infinitely more value than a remedy obtained from an unknown source.

In some cases he has used large doses, even up to 500,000,000 every three or four days. It is said that the dose for the urethritis should be 75,000,000, for the iritis 250,000,000, and for the arthritis 500,000,000, but the author does not indorse the action of the medical man who gave an initial dose of 825,000,000. He is in accord with Hartwell, who finds that autogenous vaccines are valuable in all stages of gonococcic arthritis except when ankylosis has occurred. As a detail many patients have an objection to being inoculated with gonococci obtained from people respecting whose moral character they have no information. The author has treated many cases with alien vaccines, the doses of the injections being gradually increased from 5,000,000 to 200,000,000. The number of injections given ranged from 8 to 25, but in a chronic case this is inadequate. three recent cases the number of days in the hospital was 67, 76, and 114, respectively. Better results are obtained by autotherapeutical inoculations; the actual organism causing the arthritis is isolated and the results are naturally more satisfactory. In a case of gonococcic arthritis of four months' duration treated with an

autovaccine, the organism being a diphtheroid bacillus obtained from the urethra, the first injection of 5,000,000 was given on June 1 and was gradually increased to 50,000,000. By the end of July 20 injections had been given and the condition was cured.

Valuable as are inoculations they are not everything, and there is still scope for the ministrations of the surgeon. The author recently observed a case of gonococcic arthritis in which heterovaccines and autovaccines carried out for a long period and with the most careful attention to detail failed to effect an improvement. A surgeon was requisitioned, who by dilatation of the urethra under an anesthetic removed the focus of infection, allowing the antidotal treatment to exert its influence.

### THE TREATMENT OF RHEUMATISM BY INJECTION OF MAGNESIUM SULPHATE.

The Practitioner for January, 1912, contains an article by JACKSON on this subject. He says the technique is very simple. The syringe he employs is the Luer, all-glass type, of five cubic centimeters capacity. All aseptic precautions must be observed in regard to syringe, solution, and site of injection. Any muscle that is handy is used as the point of injection, but he prefers the buttocks and infrascapular regions. At present he is employing a 25-per-cent sterilized solution, and injects 4 Cc. into adults. Only recently he has been using ampoules containing 4 Cc. of a 25-per-cent solution. The injections may be given daily, when the symptoms are severe, for the first three or four days, but in no case has he found it necessary to give daily injections for more than three days, after which time the symptoms were so ameliorated that every other day to two days apart proved of sufficient frequency for the injections.

He asserts he would be remiss did he not report that in two cases of amygdalitis, of the follicular type, in which the salicylates failed injections of magnesium sulphate were given daily for two days with

brilliant results. The injections were aided by applying a saturated solution of magnesium sulphate externally to the throat as a wet dressing. Fever, pain, inflammation, and swelling disappeared very shortly after the first injection and local application.

From time to time more will be published on the therapy of magnesium sulphate, and it is his earnest hope that other practitioners of medicine will give this method of treating acute articular rheumatism a trial. The results are convincing, and while there is no scientific explanation as to how this simple drug acts in such cases, he asserts that one need have no fear of appearing unscientific in employing this very potent agent in combating a disease for which as yet no positive cause has been determined.

#### THE NON-SURGICAL TREATMENT OF CHRONICALLY DISCHARGING FARS

In the Journal of the American Medical Association of February, 1912, Wells gives these directions as to methods of applying medication. He says there are three methods that can be employed in bringing medicinal agents in contact with the diseased surfaces of the middle-ear cavities, viz., irrigation, insufflation, and instillation.

By irrigation is meant the directing of a liberal quantity of solution through the external auditory canal, which in case of a sufficient defect in the drum membrane will accomplish a general cleansing of the tympanic cavity. It may be done by means of a bulb or piston hand syringe or by the use of a fountain irrigation bag with a proper nozzle. The solution should have a temperature of 90° to 100° F., and care should be taken to use only moderate force. Too great a pressure will often produce a very unpleasant vertigo. To avoid this it is well to have the nozzle of the instrument so placed that the stream will be directed against the upper or posterior wall, instead of going straight inward. After irrigation, the canal should be dried as thoroughly as possible with cotton-tipped applicators.

Of solutions which are recommended for use in this way Wells mentions boric acid, 4 per cent; phenol, 1 to 2 per cent; liquor cresolis compositus, 1 to 2 per cent; liquor formaldehyde, 1 to 2000; mercury bichloride, 1 to 5000.

The objection to irrigation, at least when frequently practiced, is that it tends to produce maceration of the parts and favors sloughing. Heat and moisture are, moreover, as is well known, the two chief requirements for the growth of bacteria, and perhaps for that reason should be avoided where possible. As done by the patient it is generally efficient, and Wells is of the opinion of Gleason that "discharging ears do better under methods of treatment in which syringing has little or no part." At times, however, it is indispensable, at least in the beginning of the treatment.

Insufflation is the blowing of a powder into the canal of the ear to become spread over the diseased parts. Various powders are used, but mainly boric acid, aristol, europhen, and iodoform. They are aimed to have a drying effect on the membrane and at the same time to exert a germicidal action. Powders should not be used unless there is an almost or complete destruction of the drum membrane and the discharge happens to be very scant. If these precautions are disregarded, caking is likely to occur, and it may be that the perforation in the drum will be clogged, interfering with drainage. This, of course, is dangerous. In all cases in which the use of powder is contemplated an otoscopic examination must be first made, and the ear again carefully inspected from time to time to ascertain the state of things.

Instillation means the dropping of a small quantity of any fluid medicinal agent in the canal, with the intention that it shall arrive at the diseased parts and there produce its healing effects. It is especially designed for the introduction of agents which have for their purpose a supposedly direct therapeutic action on diseased mucous membrane. This method, he believes, is the ideal one for the treatment of the chronic form of otitis. In this condition

profound changes have taken place in certain parts of the middle ear, and it is necessary to reach them if we are to get results. It is only by the instillation method, properly done, as he hopes to point out, that the medicine can be made to arrive successfully at the desired place, especially in a degree of concentration sufficient for the purpose.

The writer calls our attention briefly to one or two points in the anatomy and pathology directly relevant to the main points of his contention.

The tympanic cavity, it must be remembered, does not constitute of itself the entire middle ear. Situated above and behind this cavity lies the so-called antrum, the largest of the mastoid cells. This cell is connected directly with the tympanic cavity by a channel, the aditus and antrum, through which the lining of these two cavities becomes continuous. It is a wellknown fact that in all cases of profuse suppurative otitis, the antrum, no less than the tympanic cavity itself, must be regarded as the source of the discharge. The tympanic cavity being more accessible to treatment, and besides being the more advantageously situated for drainage, naturally yields the more readily to treatment and returns the sooner to normal. favorable cases inflammation of the antral walls subsides pari passu, and the case terminates in recovery with a complete cessation of all discharge.

But it often happens that the virulency of the infection is such that, though the tympanic cavity proper may clear up, the antrum still lingers in the throes of the suppurative process. Sometimes the aditus or channel connecting these two cavities becomes much narrowed by the inflammatory thickening of the wall or the presence of inspissated secretions, which naturally increases the difficulties of drainage and may lead to a complete imprisonment of the purulent matter in the antral cavity.

Let no one object that these statements are merely theoretical and speculative. Otologists know well enough that they are based on undisputed pathologic facts, as revealed by the findings of autopsy and the experience of the mastoid surgeon. Those who are in the habit of opening the mastoid process so frequently encounter an antrum filled with granulation tissue, cholesteatoma, polyps, and other products of a degenerated mucosa in cases of old suppurative otitis, and there is never a doubt in their minds that here lies the focus chiefly responsible for the persistence of the discharge. In view of these facts the futility of attempting to cure old otorrheas by the methods ordinarily practiced must be evident.

What more can the routine syringing of the ear accomplish than merely clearing out such secretions as are present in the tympanic cavity? The irrigating fluid, supposing the drum-membrane defect to be adequate, flows through the opening, and returns without coming in contact at all with the region which most requires treatment. Even though some of the fluid did succeed in reaching the more remote recesses of the middle ear, it could not be expected to have any very decided effect, as only dilute solutions of mildly antiseptic qualities can be employed in this fashion.

#### ALBUMIN MILK AS CONTRASTED WITH OTHER MILK MIXTURES IN THE TREATMENT OF THE DIARRHEAS OF CHILDREN.

HEIMAN in the Archives of Pediatrics for December, 1911, writes on this subject. He reminds us that basing his treatment of the diarrheas of children on the supposition that the predominant etiologic factor is bacterial infection, it has been the aim of the pediatrist until recent times to provide a sterile food which at the same time is not a suitable culture medium. With this he usually combined the administration of drugs which were supposed to produce disinfection of the intestinal tract. view that bacterial infection plays an important part in the diarrheas of children has gradually been losing ground in the last few years, chiefly due to the work of Czerny, Keller, Finkelstein, Meyer, and

Pfaundler. investigators have These shown that in a great majority of cases bacterial infection plays but a secondary rôle, and that the predominant factor is one or more constituents of the food which produces a disturbance in the metabolism. With the coming forward of this view it can be readily seen how the dietetic treatment must assume more and more importance. First of all, the proteids were held responsible, then the fats, and last the carbohydrates have been accused of being the offending agent. Starting with this supposition, that the carbohydrates are the active producers of fermentation in the intestines, Finkelstein and Meyer have recently advised the use of a food which they call "Eiweiss milch" or "albumin milk." The experience of Finkelstein and Meyer at the Kinderasyl in Berlin showed that an infant food which is adapted for the removal of intestinal fermentation must contain a minimum amount of carbohydrates and salts with a normal amount of casein and a variable amount of fat. They found that casein, when added to the diet of an infant suffering from intestinal fermentation, produces a rapid improvement in the stools.

Such a food is prepared as follows: A tablespoonful of essence of rennet (or two tablets of rennet) is added to 1 liter of milk, which is then placed in a water-bath at 42° C. for one-half hour. It is then filtered slowly by gravity without any pressure for about one hour through cheese-cloth. The coagulum is then washed twice in ½ liter of water through a very fine sieve and forced through by means of a wooden club. Then ½ liter of buttermilk is added. The chemical analysis of this food shows:

	Eiweiss milk.	Cow's milk.
Proteids	3.00	3.00
Fats		3.50
Carbohydrates	1.50	4.50
Ash	0.50	

A liter of Eiweiss milk contains about 370 calories.<sup>1</sup>

Finkelstein and Meyer's results with this food in cases of diarrhea, including those of dyspepsia, decomposition, intoxication, and parenteric infections, were strikingly brilliant. In most cases the diarrhea disappeared in the course of three days, and the temperature became normal. It was found, however, that in the majority of cases there was a loss of weight during the continuance of exclusive feeding with Eiweiss milk. To overcome this loss, sugar in the form of Soxhlet's sugar, Liebig's extract, or Loeflund's maltose was added in increasing quantities, as soon as the stools became formed. In most of the cases Eiweiss milk was used from eight to twelve weeks. In none of them was any deleterious effect demonstrated from this mode of feeding.

Finkelstein and Meyer's report on the striking results obtained with this food came out in the May and June numbers of the 1910 Jahrbuch für Kinderheilkunde, and did not reach the writer until July. Several weeks were consumed in overcoming technical difficulties in the preparation of the food, so that the greater half of the diarrhea period passed before it could be employed at the bedside. These remarks are made in anticipation of a possible criticism of the small number of cases reported In analyzing the tables it was unfortunately found that a considerable number had to be excluded for one reason or another as inconclusive, so that there remained only 13 cases for the present report, which, had it not been promised, he asserts he would feel very reluctant to present at this time.

Eiweiss milk was administered to 13 patients suffering from diarrhea for a length of time sufficient to determine its immediate effect on the general and local condition. The author wishes to make clear that his aim was not to study the results of a prolonged use of the food, but its effect during the first five days. This, to his mind, is the only fair test for the efficiency of antidiarrheal dietetic or remedial agents. For the purpose of proper classification these cases were divided into mod-

<sup>&</sup>lt;sup>1</sup>Since the writing of this paper the author has regularly added 1 grain of saccharin to each quart of albumin milk, finding the palatability of the food considerably increased by this addition.

erate and severe. The moderate cases included those with only slight fever, mild general symptoms, and green stools varying from six to ten a day, containing mucus. The severe cases included those in which there was prostration, pyrexia, and very many stools, eight to ten or more a day, green in color and occasionally bloodstreaked. The latter class would come under the head of alimentary intoxication of Finkelstein. There were seven cases of the moderate type. Their ages were: One 4½ months, two 5 months, one 7 months, one 12 months, one 151/2 months, one 16 months. All but two had previously been breast- and bottle-fed. Two were exclusively bottle-fed. The duration of the disease previous to the admission to the hospital varied from five days to five weeks. The Eiweiss was given for a period varying from three days to twelve days. The effect of the administration of Eiweiss on the stools is shown in the following table:

Condition of stool after treatment. Prior to treatment.

1st case, 6 green stools....... Yellow after four days.

2d case, very many green stools Three green after eight days.

3d case, 5 green stools.......Two green after second day.

4th case, 10 green stools.......One green after second day.

5th case, 6 green stools......Two green on third day.

6th case, 6 green stools.......No change.

7th case, 8 green stools......One yellow after three days.

Of these, three gained from 2 to 5 ounces and four lost from 2 to 5 ounces.

Maltose was added from the second to the tenth day, and in one case at once. All but one of these recovered.

## SOME CLINICAL CONSIDERATIONS OF OSMOTIC PRESSURE.

Jona in the Australian Medical Journal of December 2, 1911, reminds us that the cells of all animals above the Elasmobranch fishes are bathed in a nutrient fluid whose osmotic pressure is a constant, and which is kept constant, against alterations in the osmotic pressure of the animal's environment by various mechanisms in the body.

This process of standardization of the physical constants of the cellular environment has rendered these cells very sensitive to alteration in these constants, and so any alteration in, say, the osmotic pressure of

the environment will be accompanied by alteration in the normal functions, or even by disintegration of the cell. For example, the red blood cells of a mammal are attuned to a fluid environment of a constant osmotic pressure, which is represented by a depression in the freezing point of about 0.6° C. Now, as is well known, if these cells be exposed to an environment whose osmotic pressure is above this standard, which is represented by 0.9 per cent (normal) saline. say, to a 5-per-cent salt solution, the corpuscular envelope is unable to withstand the tendency of water to pass out from the cell into the environment in response to its higher osmotic pressure, and so the volume of the corpuscle diminishes and the capsule becomes crenated. Similarly, when the corpuscles are placed in a hypotonic solution, or in distilled water, they swell and ultimately burst, due to the passage of water through the capsule into the corpuscle as a result of the higher osmotic pressure of the contents.

The blood of the normal animal has an osmotic pressure represented by a \( \delta \) of about 0.6° C., which is equivalent to a pressure of about 7 atmospheres. Now, all the secretions and excretions of the body have the same osmotic pressure as the blood except the sweat, saliva, and urine and tears, and probably gastric juice. Saliva and sweat are always hypotonic. Urine varies; so also does gastric juice. The tears are said to be hypertonic. The variations in ⊿ of urine in men lie between 3.5° C. and 0.08° C., the low readings occurring in certain cases of diabetes or after a prolonged drinking bout, the average on ordinary diet being about 1.2° C. It is principally by means of the kidneys, with the intelligent cooperation of the will, that the osmotic pressure of the blood is maintained constant. Any tendency to dilution of the blood is quickly and easily got over by the copious production of watery sweat and dilute urine; but the reverse process, the keeping down of the osmotic pressure when circumstances determine a rise, is much harder and entails a great deal of work on the kidneys

in producing a concentrated fluid from the blood, against a great osmotic pressure. That the cells of the body soon suffer when the osmotic pressure of the blood rises is at once seen in the case of sailors lost at sea who try to quench their thirst with sea water, which has an osmotic pressure about four times that of the blood. The cells of the highest nervous centers are the first to suffer, and the individual becomes maniacal and usually puts an end to his existence long before his suffering but wiser comrades who do not drink the sea water; but these eventually suffer the same fate, especially if atmospheric or other conditions favor the loss of abnormal quantities of water, in the form of perspiration, etc. Similarly with other tissues—e.g., if a strong saline or saccharine solution be taken into the mouth the mucous membrane becomes "roughened," or if any part of the body be kept submerged in water, water is imbibed and the part becomes waterlogged.

Now, the passage of salts or water through a tissue in response to osmotic influences acting from without is accompanied by more or less painful sensation. It is generally common experience that the introduction of a drop of distilled water or strong salt solution into the conjunctival sac-especially if this membrane be inflamed—is distinctly unpleasant, while the introduction of normal saline, especially if it be warmed to body temperature, is quite unnoticeable. This is a point which could very well be noted in connection with the ordering of eye lotions or eye washes, a drug having a much better chance of exerting its action when the eye structures exposed are not being irritated by a hypotonic solution; and similarly with solutions whose only functions are lavage, such as lotions for washing out bladder or urethra, or for bathing extensive raw surfaces. author has tried isotonic solutions in all these classes of cases, and the patients' expressions of comfort were really worth the trouble of adding a teaspoonful of salt to the pint of lotion. Another use to which a normal saline solution could be put is in the making up of washes and lotions in which the surgeon steeps his hands for several minutes at a time in sterilizing them. As is well known, under ordinary conditions the skin of the hands soon becomes waterlogged and loses the delicacy of its sense of touch, which is a distinct disadvantage in some cases.

We thus see how the various tissues of our body suffer when exposed to hypertonic and hypotonic solutions. The walls of the mucosa lining the alimentary tract form no exception to this rule. Although the semisolid foods, which enter our alimentary canal, are principally albuminous and hence play a very small part in the osmotic phenomena in the body, yet we know that liquid foods which enter the body have an osmotic pressure varying from practically nil in the case of tap water to many times that of the blood in the case of some beverages. What is nature's attitude toward the ingestion of these foodstuffs? The researches of the author on the subject have shown that of all the fluid foods which enter the body, the sense of taste regards as bland and acceptable all whose osmotic pressure is a little below that of the blood (with a  $\triangle$  of about 0.4° to 0.5° C.), so long as the fluid does not contain any irritating chemical substances which have specific action on the senses of taste and smell.

Fluid foods which possess a lower osmotic pressure than this, such as extracts or infusions of vegetable or animal matter (as tea, coffee, vegetable soups, and meat broths), are brought up to this standard by a sugar or salt addition respectively in This hypotonic food the various cases. leaves a water excess which is useful to the animal's economy for the dilution of hypertonic gastric juice or the supplying of a means of flushing out the system through the secretory activity of the cells of the kidney or sweat glands. The ingestion of foods whose osmotic pressure is above that of the blood leads to the development of the sense of thirst. This desire for drink is most naturally satisfied by water, which would dilute the hypertonic solution down to a reasonable degree. As far as his work has gone it shows that alcoholic beverages form the only exception to this rule. The explanation is that man is the only animal who manufactures and consumes alcoholic beverages, and so nature has not had time to develop in him the protective mechanism in this osmotic quality of the sense of taste which demands the ingestion of water to satisfy the thirst brought on by the taking of the hypertonic foods into the mouth. All fluid foods which contain a saline content above that of the blood must enter the body under protest. In the case of saccharine fruit-juices, or alcoholic beverages, the sugar or alcohol, as the case may be. rapidly enters the blood and is oxidized or stored in the body, while the saline constituents alone remain to play their part in the osmotic phenomena in the body. The author's work has shown that all those fruit-juices which possess a high osmotic pressure owe this high pressure to their sugar content, and not to their inorganic salts.

These facts lead us to the conclusion that in the ordering of diets, particularly for infants or invalids, especially those afflicted with gastrointestinal troubles, we must see that they are correct not only as to their chemical constitution but also as regards their physical relationships to the blood. The broths, drinks, etc., should always be salted or sugared up until they are just hypotonic to blood—thus allowing a slight water excess for flushing-out purposes. The foods should not even be isotonic with the blood, for the experiments of Sommerfield and Roder have shown that an infant fed on an isotonic milk diet excretes hypertonic urine. This means that under these apparently ideal conditions the kidney is doing work against osmotic pressure. This is a consideration in cases of severe kidney inefficiency, for, by so modifying the diet, we can diminish the work of this organ against osmotic pressure and so give it a better chance of recovering and performing its other functions more effectively, for the work of Kovesi and Roth-Schultz shows that the pathological kidney does not possess the power of accommodation to alterations in the osmotic pressure of the diet (Akkomodations breite) that the normal kidney possesses, particularly those described as acute and chronic parenchymatous nephritis.

In diarrheic conditions, too, the osmotic pressure of the diet should be taken into account. The transudate in cholera and diarrheic conditions generally has been shown to be really a saline fluid isotonic with blood, so that the fluid which is given to the patient to quench the severe thirst produced should not be pure water, but should be a fluid containing all the saline constituents of the blood. Such a fluid, as Ringer's fluid, slightly diluted, would admirably suit this purpose.

The whole subject is intensely interesting and opens up many fields, which can, however, be much better studied clinically than in the laboratory.

# TREATMENT OF PNEUMONIA BY A POLYVALENT STOCK PNEU-MOCOCCIC VACCINE.

CHARTERIS in the Glasgow Medical Jour-NAL for January, 1912, reaches the following conclusions:

- 1. The administration of a stock pneumococcic vaccine had no marked effect upon the subsequent course of the disease.
- 2. The mortality in the vaccine series (21 per cent) was slightly higher than in the control series (20 per cent).
- 3. The early administration of vaccine did not abort the disease, nor prevent complications.
- 4. Complications were relatively frequent in the vaccine series, viz., one instance of meningitis, two of empyema, and one of hyperpyrexia.

#### PITUITRIN AS AN AID IN OBSTETRICS.

HIRSCH, in the Münchener medicinische Wochenschrift of April 30, 1912, says that in all cases of abortion or artificially induced labor it is not possible to instigate uterine contraction and expulsion by the use of pituitrin. If, however, the cervix is di-

lated by a tampon the use of pituitrin results in immediate uterine activity. When Cæsarian section is performed pituitrin is a most valuable agent to induce and maintain contraction of the uterine muscle whereby hemorrhage is controlled. For the treatment of the patient after parturition pituitrin is a satisfactory substitute for ergot.

# THE TREATMENT OF SCIATICA BY MEANS OF INTRANEURAL INJECTIONS OF SALINE SOLUTION.

The London Practitioner for January, 1912, contains an article by HAY. As to the technique he says that in making the injection he uses an ordinary antitoxin syringe fitted with a needle 4 centimeters long. To find the nerve he has been in the habit of using a method the name of whose inventor he has forgotten. With the patient lying prone he identifies the posterior superior iliac spine and from it draws two imaginary straight lines, one to the tip of the great trochanter and one to the inner margin of the ischial tuberosity. He bisects the angle thus formed and measures 61/2 centimeters along the bisecting line. Round the point thus obtained he presses firmly with his thumb until he finds a spot at which pressure causes pain along the course of the nerve. He marks this spot by pressing his thumb-nail firmly into the skin so as to indent it.

The skin is then cleansed and the needle of the syringe, already filled with saline solution at blood heat, is inserted perpendicularly to the surface until it reaches the bone, and then withdrawn about half a centimeter. Before proceeding to inject it is necessary to make sure that the point of the needle is actually within the nerve sheath. Most operators state that when the needle pierces the nerve the patient's leg jerks convulsively. In many cases this is true, but in others, especially if they have been injected previously, no such indication is given. Having inserted the needle, therefore, as described above, it is well to press gently on the end of the plunger so as to expel a few drops of fluid from the needle,

and ask the patient if he feels anything. If the needle be within the nerve sheath he will reply that he has a sensation as of trickling or crawling, or in rare cases of actual pain, and will indicate the direction of the sensation by drawing his finger downward along the line of the nerve. The distance downward to which this sensation extends varies in different cases, and in the same case at different sittings. It may stop at mid-thigh, or may pass downward as far as the foot. When this sensation has been elicited the syringe should be emptied rapidly, the needle withdrawn, and the puncture sealed. In his latest cases Hay has used Heck's landmark, and is of opinion that it is even more useful than that described above, especially in fat patients, in whom it may be difficult to identify the inner margin of the ischial tuberosity.

After injection, if the pain beforehand has not been sufficient to confine the patient to bed, he is made to get up and walk about slowly, and if he be an out-patient he is sent home immediately. In cases in which he has been confined to bed he is allowed to lie still until he feels himself free from pain.

In Hay's experience the most severe cases have given the best results, and he cannot therefore accept Bunn's advice against the use of injections in acute cases.

It will be observed that he uses much smaller quantities of fluid than most other operators (Lange and most of his followers use 70 to 100 Cc., Hecht up to 120 Cc.), and in view of his results he does not consider that the use of the larger quantities offers any advantages, while it has disadvantages in being occasionally followed by high temperature and rigors, or sometimes by weakness and wasting of the limb.

Indications for Treatment by Injection.

—In his opinion all cases of persistent sciatic pain not due to diseases such as tabes, diabetes, malaria, etc., nor to pressure by tumors intra- or extra-pelvic, ought to be subjected to injection early. In view of the rapidity with which a cure is obtained in favorable cases it seems a pity to keep patients waiting while ordinary methods of

treatment are employed for weeks or months. In his hospital practice the cases which come to him have all been previously subjected to drug treatment. He then treats them for a week with high-frequency currents, general and local, to eliminate certain cases curable in that way and also those amenable to suggestion. The cases which receive no benefit from high-frequency treatment are then injected. In cases not benefited by injection he recommends open operation, preferably shifting the sheath and teasing out the nerve strands, and dissecting away all adhesions between the sheath and surrounding tissues. He does not advise bloodless nerve stretching, as he considers it a haphazard method, inferior in results to injection.

# THE CAUSE AND TREATMENT OF SUMMER DIARRHEA IN CHILDREN.

Wood in the Australian Medical Journal of January 13, 1912, in writing on this topic says that scrupulous cleanliness must be insisted upon, the buttocks being carefully washed with boracic lotion or soap and water when each napkin is changed, carefully dried and powdered with violet powder or talcum powder, and if there is the least sign of redness zinc cream will remove it. It is easier to keep the buttocks in good condition than to heal them when they become excoriated.

The soiled napkins are a great source of repoisoning; the common practice of keeping the soiled napkins for the doctor to inspect is a pernicious one. Wood frequently goes into a bedroom in summertime, he asserts, and finds ten or twelve soiled napkins lying on the floor or mantlepiece uncovered, with flies on them. These flies take up the poison on their legs and quickly transfer it to the various feeding utensils, etc. The nurse should be instructed to remove them from the bedroom and put them into phenol and water directly they are soiled, and cover them up. Also strict cleanliness with regard to the hands after handling these napkins should be insisted upon-many a diarrhea is kept up by inattention to this most necessary point. Wood asserts he has seen an epidemic of summer diarrhea started in an infant asylum from a newly-admitted child owing to the diet nurse having handled a soiled napkin and not washed her hands.

When the child is first poisoned with infected milk it usually vomits sour, curdled milk: that is the warning that nature is trying to get rid of the poison. If the medical man gets in early he can, with a No. 10 Jacques soft-rubber catheter and a funnel, wash the stomach out thoroughly and put a teaspoonful of castor oil into the stomach before removing the tube. This initial washing out with boiled water and a teaspoonful of baking soda to the pint is usually sufficient to stop the vomiting. The bowel should also be washed out at the same time as the stomach. It stimulates peristalsis.

If the child is over twelve months and the mouth is well furnished with teeth, copious drinks of boiled water with half a teaspoonful of sodii bicarb. to the pint may be given. This is, as a rule, vomited, and this cleans the stomach effectively.

Some of the poison has, as a rule, passed into the small intestine, so the initial washing of the stomach must be followed by a cathartic, and the old-fashioned castor oil is still one of our most effective doses.

The thorough cleansing of the alimentary tract directly after a poisonous dose of milk is one of the most effective ways of cutting short an attack of diarrhea. The folds of the intestinal mucous membrane which retard the intestinal contents for digestive purposes during health are anatomic obstructions that become pathological dangers when the pockets retain putrefactive food products, pathogenic bacteria, and toxins.

Therefore a thorough complete cleansing of the intestine with a cathartic and a thorough washing with water from the stomach to the rectum is the only proper treatment of the disease.

Look on the poison as one would a poisonous dose of arsenic, and get rid of it in the most thorough way possible. Water for twenty-four hours after this cleansing is the proper treatment. It may be given hot through a sterile bottle, or, if preferred, cold.

At the end of twenty-four hours, if fresh milk can be obtained, the child may be put on alternate bottles of rennet whey and boiled water. If the whey agrees it may on the following day be given in every bottle, and the next step is to boil it and add milk to it in gradually increasing amounts, being guided by the appearance of the motions as to whether the child is able to digest it.

If the whey does not agree one of the artificial foods, preferably one with a little starch in it, is often taken well and is a useful stepping-stone by which the child may be gradually taken back to milk.

The great secret in feeding the child is not to order half a dozen different things to be given alternately. Try one at a time, and if it agrees stick to it, and if it does not move on to something else. It is not an uncommon experience to see a child with summer diarrhea on albumen water broth, raw meat juice, whey, and something else, given one after the other on the same day. If baby does not improve you must be at a loss to know what to blame for the non-improvement.

If one cannot get anything to suit the baby, one must not forget that nature would give breast milk if the mother had not failed, and that a wet-nurse can usually be obtained with a little trouble. If not, it is very rare that a mother cannot get another nursing mother to provide some breast milk, even if she will not actually nurse the child at the breast. Wood has observed some cases that looked almost hopeless saved with breast milk.

As to drugs, he asserts he has tried them all and finds himself very doubtful now as to the propriety of giving any of them except opium. He stopped giving bismuth, suspended with acacia, some years ago, as it was his fate to see the teaspoonful dose in the intestine, without having been spread over the mucous membrane, as he had fondly hoped it would have been.

He used bismuth subnitrate in large doses (10 grains every two hours) for

many years, but the cases he finds now do as well without it. Salol, resorcin, and liquor hydrargyri perchloridi have all in turn been used as intestinal antiseptics, but those who formerly strongly advocated their use have gradually become less fervid in advocating them.

The use of opium in these cases requires care, and it is wise not to combine it as is usually done with other drugs. If one uses bismuth one must give it in large doses and frequently; but the opium has to be given according to symptoms and had best be prescribed apart from the bismuth. The initial cleansing of the alimentary tract is essential after an attack of poisoning; this is followed by water diet for twenty-four hours, and then opium may be safely started to relieve pain and check excessive peristalsis, but never enough to stop the motions and cause stupor.

Opium is also very useful in the convalescent cases in which extra food is being taken, and it is found that a bottle of food is immediately followed by a motion; giving the food cold is also wise in these cases as it is less apt to be followed by peristalsis. In cases of dysenteric diarrhea, starch and opium enemata relieve the tenesmus. cases of cholera infantum, in which a high temperature is followed by frequent vomiting and purging, the motions quickly become the type known as rice-water stools. Morphine hypodermically is our only remedy, and is frequently the means of saving the child's life, neutralizing as it does the effect of the toxin on the heart and nervous system. [We doubt this.—Ed.] child twelve months old 1/48 of a grain of morphine may be used, and if the vomiting and purging are not checked in an hour's time it may be repeated. In these cases the symptoms are so rapid in their onset that nothing short of stomach and bowel washing is of any avail, and this must be done as soon as the child is seen.

The high temperature frequently met with in cases of summer diarrhea is best treated with cold bathing and sponging, always using colder water on the head than the water in the bath, to avoid headache.

Washing out the bowel with a long rectal tube and a funnel is frequently of the very greatest service. Wood has frequently had a baby brought to him with a high temperature, crying bitterly, drawing up its legs with abdominal pain, and had the satisfaction of seeing the child go to sleep whilst gently irrigating the bowel with warm water and bicarbonate of soda (a teaspoonful to the pint). Once a day is quite often enough to do this, but if the child offers much resistance it is often unwise to persist in attempting to do it. Often a large amount of flatus is allowed to escape from the bowel by this method, with very great relief to the child.

### THE TREATMENT OF CONSUMPTIVES IN PRIVATE PRACTICE.

In the Australian Medical Journal of December 2, 1911, BAGE tells us that for the last two years he has used the filtered bouillon supplied by Professor Denys, of Louvain. This variant of old tuberculin is so extensively employed in Europe, and so little known here, that a short description of its constitution and mode of use will not be out of place.

The material used, known familiarly as B. F., is prepared by allowing virulent cultivations of the tubercle bacillus to macerate slowly in Koch's bouillon for long periods in closed vessels; some of the cultivations had been macerating for eight years at the date of the writer's information. Another method employed with equal effect is to mix a bouillon that has been two years in contact with these bacilli and a bouillon that has been so treated for six months. each case the preparation is filtered through porcelain, and the filtrate, without being heated or concentrated by evaporation, is bottled for use. What means of standardizing it are employed the writer does not know, but its reaction-producing power is about equivalent to that of the old tuberculin.

On first using this preparation Professor Denys began with a dilution of 1 in 10, finally attaining a dose of 1 Cc. of the undiluted preparation. But in pursuance of his method, which was to avoid producing a reaction, he found it necessary to make a further series of dilutions, viz., 1 in 1000, 1 in 10,000, and so on to 1 in 10,000,000, the diluting fluid used being Koch's bouillon. Owing to his reluctance to alter the labeling of the dilutions he first employed, his nomenclature of these eight strengths is somewhat confusing, and upon making the successive dilutions for use upon his own patients, he found it convenient to number them from the weakest No. 1 successively to the undiluted preparation No. 8. The method of employment is to give regularly increasing doses twice a week, beginning with the weakest dilution in afebrile cases. Four or five progressively increasing doses are given from each strength until 1 Cc. of the undiluted preparation is reached. But this regular increase of dose must not be practiced in the event of a reaction occurring. Should a reaction occur, the same dose must be repeated next time, but not until after the reaction has subsided: if another reaction occurs the dose is to be diminished, increasing again when tolerance is established: and even in the absence of reaction it is recommended that at some periods the dose that has been attained should be repeated for two or three weeks, without increase. It is essential, therefore, to be on the watch for evidence of reaction. in the form of induration, redness, heat, or pain, occurring some hours after the dose is administered; sometimes in the infected area, pain and oppression in the chest, increased cough and expectoration being suggestive of reaction in pulmonary cases. But the more common evidences are of a general character, such as headache, pains in the limbs, general discomfort, depression, weariness, restlessness, insomnia, loss of appetite, rise of temperature, and occasionally drowsiness. On several occasions the author obtained marked reactions through impatiently advancing the dose when the quiet progress of the case made him suspect that the bouillon was inert. Great stress is laid by Professor Denys upon the observation of minute variations in temperature,

and he recommends that the patient should be drilled into taking his temperature five times a day, keeping the thermometer under the tongue for seven minutes or in the axilla for fifteen minutes.

The claims made for this treatment are that it immunizes the tuberculous subject against his tuberculosis, and that the patient after a second course of treatment a few months later will not react to the tuberculin test. A statistical diagram is published showing a large proportion of cures, especially in early cases, and it is said that even when the bacilli do not disappear from the sputum they are often observed to have degenerated, becoming elongated and granular.

An attractive feature of this treatment is that it is not attended with distressing reactions, and that the patient's routine is so little disturbed by it. When Bage came to put it into practice two years ago he was soon convinced that even in the smaller doses a steadying effect was produced upon the patient's temperature, and he then resolved to make a definite trial of its effects in the first instance upon advanced cases of consumption. Success in incipient cases would prove nothing, while harm might be done by keeping these patients in town instead of sending them away to better surroundings. Besides, he soon found that there is a limit to the number of consumptives that one can attend privately; most of them are impoverished by illness and would be unable to persist in a long course of treatment without special encouragement. His notes therefore relate to a comparatively small number of patients, for he made it a rule to advise removal from town wherever practicable in incipient cases. Two were cases of enlarged glands in the neck, these patients reacting positively to the von Pirquet test. The remaining twelve exhibited the bacillus in their sputum; five of these twelve had cavities, and all but one had patches of consolidation; in four cases both lungs were affected.

It would have been interesting and valuable to have compared this treatment with a similar use of the old and new tuberculin.

and to have tested the patients by means of the various diagnostic reactions. But private medical practice cannot be carried out on the lines of scientific experimentation, and these observations must be left to a future occasion.

Bage's conclusion is that this method has a powerful immunizing tendency, and that it is very much safer than any of the processes that are designed to evoke repeated reactions. Being regulated by clinical observation it is eminently applicable in private practice, and is an ideal method for tuberculin dispensaries, which are, in Bage's opinion, much needed in Australia.

[Our own belief is that tuberculin in all its forms should be used only in a very limited class of cases, and only by men specially trained in its administration and study.—ED.]

## THE SOLUTION AND DECOMPOSITION OF ACETYL-SALICYLIC ACID.

To the British Medical Journal of February 3, 1912, MARTINDALE writes as follows:

Dr. Graham Chambers criticizes Dr. Wynn Westcott and Martindale for stating in the Extra Pharmacopæia that acetylsalicylic acid passes unchanged through the stomach, decomposing when it reaches the intestine, his view being that the substance is absorbed as such without decomposition. His experiments in vitro indicate that very little of the acid splits up in half an hour, either in acid or alkaline juices, and in his conclusion he advocates the administration of acetyl-salicylic acid "in solution," so as to reduce the decomposition to a minimum -that is, he claims that so given it passes rapidly into the intestine (pharmacological action being frequently seen in half an hour) and is absorbed for the most part unchanged. It therefore appears that the statement in the Extra Pharmacopæia to the effect that it passes unchanged through the stomach (whether given in cachet or solution would probably make little real difference) may certainly stand, even according to Dr. Chambers's view—the exact pharmacological action is not stated, though perhaps it is implied.

With regard to the action on reaching the alkaline intestinal juices, there must surely be a splitting up of the acetyl-salicylic acid, and the formation of sodium salicylate, however slight at this stage, either from the nascent salicylic acid previously formed in passing through the stomach-admitted by Dr. Graham Chambersor by the splitting up of the acetylated acid by action of the alkali. Dr. Graham Chambers admits, also, that at body temperature there is "little" of the acetylated acid decomposed at the end of half an hour both in acid and in alkali in vitro, but of course it is difficult to say exactly what occurs in vivo by reviewing experiments in vitro.

Martindale points out that the prescribing of acetyl-salicylic acid in simple aqueous solution is hardly satisfactory. A dozen 10-grain doses in this form would necessitate the dispensing of them in a 120ounce Winchester! At the same time a very sightly mixture can be made by suspending 10 grains of the powdered acid in 1/2 ounce of water, with the aid of 90 minims of tragacanth mucilage—that is, 12 doses in a 6-ounce bottle. Sooner or later. however, in presence of water, acetyl-salicylic acid splits up, and therefore the use of an aqueous medium, let alone an alkaline one, especially in hot weather, cannot be strictly correct; 10 grains of the drug in powder form would require about 10 ounces of stomach juice to dissolve it, and the result—passage rapidly to the intestines as Dr. Chambers holds, would be practically the same thing as if the drug were in solution.

With regard to the details of experiments, it so happens that by a curious coincidence Martindale conducted a number of experiments last year with acetosalicylic acid, both in aqueous solution and in solution with added HCl in the correct proportion, and arrived at conclusions almost identical with those of Dr. Graham Chambers, so far as *in vitro* is concerned. For example, he found by colorimetric analysis that 5 per cent of a total weight of

aceto-salicylic acid in saturated solution in presence of 0.2 per cent HCl was hydrolyzed in an hour. Seeing that pharmacological activity is evident in less than this time, it may be that just this small amount of liberated nascent salicylic acid passing on to the alkaline intestinal juice produces or commences the pharmacological action, and we may have here an explanation of the comparatively potent action of a dose of salicylic acid in comparison with the mild effect of this slowly produced nascent acid. Dr. Chambers and Martindale are agreed that the decomposition of acetyl-salicylic acid in the presence of 0.2 per cent HCl is a gradual process, and adds that so long ago as 1903 (Schweiz. Woch. f. Chem. u. Pharm., 1903, p. 116) doubt was expressed whether the therapeutic activity of acetylsalicylic acid was due to its passing unchanged into the intestines, and experiments are cited showing the hydrolysis of aceto-salicylic acid in presence of artificial It was there questioned gastric juice. whether a dose of a salicylate would not produce a therapeutic effect equal to the acetylated acid.

#### RECENT ADVANCES IN OUR KNOWL-EDGE OF RACHITIS.

TALBOT in the American Journal of Diseases of Children for February, 1912, states that Kassowitz first recommended phosphorus in the treatment of rachitis. His original prescription, known as phosphorlebertan (phosphori 0.01, ol. jecor aselli, q. s. ad 250), still holds first place in Germany in the treatment of rachitis. Kissel found in his experiments on animals that phosphorus had absolutely no effect on the skeletal system, and concluded that there was no ground for its use. Despite this report phosphorus continues to be used and many experiments have been performed to prove its efficiency.

Birk and Schabad both concluded that phosphorus in therapeutic doses does not affect the calcium metabolism in healthy children. Such children take only as much phosphorus as they need for growth regardless of the amount in the food. In rachitis cod-liver oil increases the retention of phosphorus and calcium, and this action is intensified by the addition of phosphorus to the oil. The increased retention of calcium starts three to five days after giving phosphorus, and gradually diminishes until at the end of two months it is again normal. This depends on the increased absorption and decreased excretion through the urine The question now comes up and feces. whether oils as such in combination with phosphorus have a therapeutic action on rachitis. Schabad investigated the action of phosphorus, cod-liver oil, and "sesamol" on the metabolism of calcium, phosphorus, fat, and nitrogen, and found that "sesamol" and phosphorus did not help the rachitis, while cod-liver oil plus phosphorus increased the retention of phosphorus and calcium and the absorption of fat and nitrogen. Schabad and Sorochowitsch used lipanin, i.e., olive, a substitute for cod-liver oil, which was supposed to be easily absorbed because it contained free fatty acids. They concluded from their metabolism experiments that lipanin and olive oil increase the absorption of nitrogen and fat, but that lipanin has no advantage over olive oil. Lipanin does not increase the retention of calcium in rachitis. and is therefore not as good as cod-liver oil in the treatment of rachitis. They say in their most recent article that sometimes phosphorus and cod-liver oil do not have a favorable action on the retention of calcium in rachitis, especially if the disease is not approaching a convalescence. At other times they have a favorable action on the calcium retention. They experimented with various other salts combined with cod-liver oil and found that a calcium acetate codliver oil had the most favorable action on rachitis because it contained much more calcium.

Most recently Caroline Towles did a series of metabolism experiments in von Pirquet's clinic in Breslau and was unable to demonstrate that phosphorus cod-liver oil had any action at all on acute rachitis. The most recent work of Towles and Schabad and Sorochowitsch indicates, therefore,

that phosphorus cod-liver oil may not have any therapeutic action in the treatment of acute rachitis.

#### CHRONIC URETHRAL PRURITUS.

The New York Medical Journal of February 17, 1912, contains an article by GREENBERG in which he says that, as to treatment, this must be applied to the removal of the cause. The itching from acute gonorrhea disappears with the subsidence of the acute inflammation. Polypi in the urethra should be removed with the curette and the base cauterized, or, better still, for quicker results, treated by fulguration by the high-frequency current. Strictures should be dilated and cut when resilient. Granulations may be destroyed with the galvanic needle or by 20- to 30per-cent silver nitrate solutions, preferably the former. In chronic posterior urethritis without prostatitis, the verumontanum should be touched up with strong solutions of silver nitrate once a week, and dilatation of the prostatic urethra by means of Kollman's dilator may often be resorted to with advantage. In others, cold sounds must be used through a metal catheter for one-half hour at each séance. The faradization of the prostatic urethra gives great relief to some patients when other methods fail. In very intractable cases, where we cannot determine the cause of the itching, relief of symptoms is obtained with an cintment consisting of

> Ichthyol, 3j; Resorcin, grs. x; Quinine and urea hydrochloride, 5ss; Wool-fat, 5ij.

To be applied to the urethra by means of an ointment sound.

When the prostate and the seminal vesicles are at fault they should be attended to by massage, faradization, cold psychrophore, and high-frequency applications.

Rheumatism, gout, and other metabolic diseases should be treated. The diet should be simple, non-irritating, and easily digestible; fruits and vegetables containing large amounts of acids (such as oxalic acid) should be avoided; likewise condiments and

all other stimulants, including alcohol. The skin must be attended to by daily baths and brisk rubbing, particularly in neurasthenic patients. The bowels should be regulated by salines or mineral waters, followed by large draughts of water.

Patients thrive well on a starchy diet, which should include oatmeal and rice; red meats should be eaten sparingly. Intestinal autointoxication should be combated by appropriate means, the therapeutics being directed toward rendering the urine bland, and the nervous system must be properly taken care of.

## THE USES OF ALUMINUM ACETATE IN LOCAL INFLAMMATIONS.

Stansbury in the American Journal of Surgery for February, 1912, says that the various treatments of such local congestions as boils, carbuncles, erysipelas, and all forms of wound infection, etc., prove, without further argument, that no one is especially helpful. For instance, the local use of iodine, ichthyol, phenol, bichloride of mercury, and solutions of lead and opium, heat and cold, all have the effect of producing a certain extent of hyperemia and asepsis, but to Stansbury they have been disappointing in their results. A watery solution of aluminum acetate, 1 to 7, has been very much more successful.

The formula in the National Standard Dispensatory for "Liquor Aluminii Acetatis" is:

Aluminum sulphate (U.S.P.), 300 Gm.; Acetic acid (U.S.P.), 300 Gm.; Calcium carbonate (C.P.), 130 Gm.; Water (distilled), 1000 Cc.

Dissolve the calcium carbonate in the acetic acid, mixed with 200 Cc. of water, and the aluminum sulphate in 800 Cc. Mix the two solutions and allow the mixture to stand for twenty-four hours, agitating occasionally. Then pour off the clear solution and filter. The solution contains 7.5 to 8 per cent of basic aluminum acetate. It is practically identical with the Liquor Aluminii Acetici of the German Pharmacopæia.

When prepared, the solution should be

perfectly clear. It is to be diluted with distilled water 1 to 7 or 10. Gauze is saturated in several thicknesses, applied directly to the parts and covered with rubber tissue or oiled silk, and a loose roller bandage is then applied. When employed in this way the dressings remain moist and it is not necessary to change them more than once or twice in twenty-four hours. When the dressings are removed the skin will be found whitish and much wrinkled unless the skin is very much congested, as in erysipelas. Stansbury has kept up the application for days and has never noticed any bad effects whatever.

Range of Usefulness.—Boils and carbuncles treated in this way are usually aborted, or if pus has already formed, the area of redness and induration is lessened and pain much reduced.

In facial erysipelas the happiest results are obtainable. Stansbury asserts he has never seen it fail to check the spreading of this obstinate infection.

In threatened alveolar abscesses from bad teeth it is, in his opinion, without a rival.

The first case treated by him with this agent was a woman, who said she was going to have another "gathered jaw," as she had had four previous times from the She already had marked same tooth. swelling, great pain and sensitiveness, and rise in temperature. A pledget of absorbent cotton the size of a little finger was saturated with a 10-per-cent solution of aluminum acetate and placed within the mouth, between the alveolar process immediately over the swelling and the cheek, while another piece of gauze saturated with the same solution was placed on the outside of the jaw, covered with rubber tissue and bandaged. The inside piece was renewed once in two hours—outside twice a day. There was no further extension of the trouble, and at the end of twenty-four hours the improvement was very marked.

He has treated a few other cases of a similar nature with results equally as good—in fact, has had none to suppurate under this treatment.

A man past seventy had his thumb in-

fected by being cut with a piece of broken glass. He was near a hospital, where he had it dressed. From seven to ten days after the accident he had a severe chill, and his physician called Stansbury in consultation. The doctor had opened a small abscess near the first site of injury earlier in the day, but when Stansbury saw the patient his temperature was 104°, the forearm was swollen, a red streak ran from hand to axilla, there were enlarged glands above the elbow and in the axilla. The patient was a thoroughly sick man. entire hand and arm to axilla was enveloped in gauze saturated with aluminum acetate solution 1 to 8, covered with rubber tissue and bandaged. Bier's hyperemia was induced by placing a rubber band in the axilla and fastening it over the shoulder. The patient showed marked improvement the first twenty-four hours, and in three days was considered out of danger. made an uneventful recovery.

Similar cases could be cited to show the wonderful effect of controlling local septic infections by aluminum acetate.

In rhus poisoning it is the best instrument at one's command. When the joints in inflammatory rheumatism are acutely swollen and very painful he has seen it used with much benefit.

Yet the fact remains that the remedy is seldom used or too little known by the American physicians. It may be because it is not usually kept on hand by our American druggists and it requires twenty-four hours for its preparation. Stansbury states he has no trouble in keeping it in his office for several months, though there is some precipitation.

# THE MANAGEMENT OF SQUINT IN CHILDREN.

LE FEVER states in the American Journal of Diseases of Children for February, 1912, that treatment is best considered under the following five heads:

1. Correction of the hyperopia removes the chief cause of the squint and is therefore of prime importance. At what age may a child be glassed? There is no definite answer to this question, but instances are very rare in which the eyes become permanently crossed in a child too young to wear glasses, if it can have proper supervision. Rarely is the patient seen before the age of one year, because the visual function is not sufficiently established before this age to call the accommodation into use for sharp vision. Young children take to glasses as they do to shoes or any other wearing apparel and give little trouble after the first week. It is Le Fever's custom to glass them when first seen unless he is convinced that the glasses will not be worn, either from pride or lack of attention on the part of the parents. A former objection to early glassing was the difficulty in knowing what to order while the child was too young to read, but retinoscopy has eliminated this difficulty.

- 2. Atropine may be used to suppress the accommodation and render third nerve stimulus of no avail in helping the visual acuity, and the patient will soon cease the effort, incidentally ceasing to overstimulate convergence. This method, once much employed, should be used only when glasses are out of the question, and until such a time as the child may be glassed. It must be used in both eyes two or three times daily.
- 3. Cure of the amblyopia is essential if single binocular vision is ever to be established. Amblyopia is a form of partial blindness, of cerebral location. It comes about as the result of suppression of the image stimulus from one eye, in an effort to be free from diplopia. All these little patients doubtless see double at first, but are too young to explain the diplopia or even to know that it is unusual. As they learn that one object is false, and it perhaps leads them to make mistakes in taking hold of objects, they begin to ignore the dimmer one-and one is always dim because focused on the peripheral retina where acuity is low. The suppression soon becomes permanent, and some effort is required to give the child diplopia even with a small light and colored glass.

The squinting eye is now unable to see well even with its fellow covered, and is said to be amblyopic. The degree of amblyopia depends somewhat on the duration of the squint. Its cure depends on the forced use of the squinting eye, by occlusion of the good eve. Occlusion may be accomplished by a bandage worn permanently, for six weeks to two years, but since this is objectionable a better plan is to have a highly concave, neutral, frosted lens fitted closely over the good eye, while the proper correction is worn on the amblyopic eye. The obscured lens must rest against the side of the nose, fit closely around the rim of the orbit, and be turned back somewhat at the temporal end. This leaves room for the lashes without allowing the child to see around it. It must be worn constantly. This is not difficult to attain in very young children, say under the age of five years, but requires close watching for a month or so in older ones. The child should be kept in the room with its mother, if necessary tied to her apronstrings, until thoroughly accustomed to the use of the amblyopic eye. It is sometimes necessary to use atropine in the covered eye as an aid to prevent peeping around the glass.

Le Fever uses this method as a routine and finds it always successful in patients seen before they are too old. It is difficult of application after the seventh or eighth year. The cover should not be removed until the visual acuity is 20/30 or better. Both eyes are then glassed with the proper correction.

4. The fusion sense must be reëstablished. If it were not originally at fault it becomes eliminated, and binocular single vision is impossible without it. In many cases it requires no treatment, resuming its function when the images can be fused. When the squint is of long standing, fusion may not be resumed without encouragement. For this purpose there are several instruments, all based on the principle of stereoscopic vision. Companion pictures are used and are either moved until they fuse, or prism aid is given until fusion

takes place, while the child watches the pictures. The child is thus encouraged to see the same object with both eyes at the same time, without diplopia—i.e., single binocular vision is reëstablished.

5. Operative measures are to be used only as a last resort, and will very rarely be necessary if the child is properly managed from the incipiency of the squint. In patients not seen early or not properly managed it becomes necessary to "straighten" the eyes in a mechanical way. This is done by shortening the external rectus, one or both, and tenotomizing the internus. The former is to be preferred to the latter, and in any case full correction is to be avoided, as the future tendency is outward and a divergent squint may result in adult life. The operation should not "straighten" but aid other measures to do so. No patient should be operated on until the correction has been worn at least one or two years.

#### SOME TOXIC EFFECTS OF SALVARSAN

Before the fifth German Congress of Neurologists, held last October in Frankfort, Professor Finger of Vienna delivered, apparently in the presence of Professor Ehrlich himself, an important address on the toxic effects of salvarsan. In his introductory remarks the Viennese syphilographer mentioned incidentally that as long as the preparation was not on the market he had not countenanced its use outside the hospital clinics, for he considered that its employment in private cases in these circumstances was unfair. After it had been placed on the market some unpleasant experiences had made Professor Finger hold his hand before advising its general use.

He considered that the only data from which conclusions should be drawn were those obtained by observation in a hospital, in a public way, where cases could be seen and followed up by several medical men, for it was easy in private practice for the sole observer to autosuggestionize himself. Dr. Finger had treated over 500 patients with salvarsan, and with salvarsan only, in

order to be able to judge the preparation on its merits, an end which could not be achieved if mercury and potassium iodide were also given. Every one admitted the good symptomatic results obtained by means of salvarsan, but he desired to deal with the complications, especially those of the nervous system.

Latterly, following the lines laid down by Ehrlich, he had used salvarsan by the intravenous method only. Among the symptoms which might follow the injection, Professor Finger enumerated the following: rigors, fever with a temperature of 40° C. (104° F.) and upwards, general malaise, prostration, headache, dizziness, vomiting, colic and diarrhea, jaundice, loss of appetite, rapid pulse, cardiac symptoms, dryness and irritation of the throat and pharynx, difficulty of breathing, psychic and motor restlessness, tremors of the knee, bladder troubles, severe sweating, conjunctivitis, salivation with salty taste in the mouth, urticaria, erythema, herpes zoster, temporary mela-In addition, soon after, indeed in some cases immediately after the injection, symptoms such as the following were observed: edema and cyanosis of the face, clouding of the mind, vomiting, diarrhea. breathlessness, diaphragmatic cramps, tonic and clonic contractions of the muscles of the limbs, severe collapse. He considered that these various symptoms pointed to an acute arsenical intoxication, and most observers were of the same opinion. He did not agree with the views of Neisser and Kuznitsky on this point, namely, that the symptoms were the result of the direct action of salvarsan on the spirochætæ—that is, were due to a general specific reaction produced by the setting free of endotoxins through the destruction of a large number of the parasites. That view could not explain the fact that similar symptoms had been observed after the injection of salvarsan in non-syphilitics, as in psoriasis and leprosy for instance. Moreover, the postmortem appearances agreed with the diagnosis of arsenical intoxication. and many others had established this point, and Professor Finger had himself a fatal case in which the necropsy was done by Professor Weichselbaum of Vienna, who had come to the conclusion in his report that in the absence of any other discoverable cause death was due to acute arsenical intoxication. Nor did Finger accept the view of Weichselbaum of Berlin, that the symptoms were due to microorganisms in the saline solution he employed. said that the saline solution he employed was always freshly prepared and sterilized by the hospital pharmacist, and he had, moreover, ascertained that even before sterilization the saline solution had been found to be practically free from germs. though both in his own clinic and in that of others in the Vienna General Hospital, intravenous injections of saline solution to the extent of a liter had frequently been carried out for various conditions, symptoms similar to those he had described had never been observed. Moreover, the same symptoms had occurred after intramuscular injections of salvarsan, so that the saline solution could have played no part in their production.

As to the very important matter of nerve involvement, Finger stated that out of his 500 cases nerve complications were observed 4 times (9 per cent), whereas in Weintraud's 1500 only 13 (0.9 per cent) and in Wechselmann's 2800 only 10 (0.37 per cent). But Zimmern had pointed out that only 125 of Herxheimer's 900 cases were kept under observation, and it was in these 125 cases that nine instances of nerve trouble (7.5 per cent) occurred. Geronne and Gutmann had stated that only 300 of Weintraud's 1500 cases were under any continued observation, and out of these 300 cases 13 exhibited nerve symptoms (4.3 per cent). Wechselmann himself admitted that he only saw a portion of his total patients again. Finger then reviewed in detail the cases of nerve complication he had observed, and concluded that the connection with salvarsan could not, on the following grounds, be doubted:

1. The occurrence of the nerve troubles with typical regularity some six to eight weeks after the salvarsan treatment.

2. The frequency of these complications in patients treated with salvarsan as compared with the relative infrequency of such complications in patients either not treated at all or treated by means of mercury; in the thousands of cases of syphilis he has had under observation for two or three years after infection such nerve complications had been very rare. But in cases treated by salvarsan he had seen in a short period 44 cases of nerve complications in 500 cases treated by salvarsan. Benario had collected in medical literature 194 cases of nerve complications after salvarsan treatment, but such statistics were of no value unless the total number of cases treated by the two methods was known, and though the total number of salvarsan cases might be known, the number of cases treated by mercury was not known.

Finger criticized Ehrlich's view that the nerve complications were due to the survival of spirochætæ in bony canals, the spirochætæ in the rest of the organism having been destroyed by the salvarsan. was, he said, no proof of the complete sterilization of the rest of the organism; on the contrary, Finger found that in 12 out of his 44 cases of nerve trouble, wide-spread affection of the skin and mucous membrane was present at the time of the appearance of the nerve symptoms, or followed the The Viennese professor adduced other objections to salvarsan, and concluded his paper by stating that, judging from his own statistics, the secondary stage, and especially the early secondary stage, was not a suitable period for the exhibition of salvarsan, 12 per cent of his nerve complication cases occurring in the secondary stage, as against 4 per cent in the primary and 2 per cent in the tertiary stages.

On the other hand, whilst admitting that the increased number of complications observed recently after the use of salvarsan, as far as the auditory apparatus is concerned, do mean something new, Dr. Karl Beck, assistant in the ear, throat and nose clinic of Professor Kümmel in Heidelberg, points out that whether these are due to salvarsan or to syphilis is another matter.

In any case he found that, whereas only one such instance of auditory complication has been observed during a period of five years in the ear clinic, five such cases had come under notice in the previous six months after the salvarsan treatment. Beck thought he could clear up the matter by injecting salvarsan in suitable doses into the vein of the tail of white mice, and then, after a time, decapitating the animals and cutting sections of embedded skull and con-The results were negative. Beck admits, too, that such experiments on animals cannot afford conclusive evidence as to what happens in the human organism. There are differences which cannot be ig-The fact remains that auditory nored. complications in the Heidelberg clinic are far and away more common since salvarsan has been used. This, at any rate, confirms the opinion expressed by Professor Finger of Vienna.—British Medical Journal, Jan. 27, 1912.

### HEXAMETHYLENAMIN IN THE TREATMENT OF BRONCHITIS.

VANDERHOOF in the Journal of the American Medical Association of February 3. 1912, reminds us that hexamethylenamin is recommended as a remedy of value in cases of acute colds and in patients suffering from acute and chronic bronchitis. drug should be given in large doses accompanied by the copious drinking of water. In the ordinary cold, treatment with hexamethylenamin shortens the stage of coryza and greatly modifies or entirely prevents the succeeding bronchitis. It also acts as a prophylactic against ensuing infection of the accessory nasal sinuses. It is our best remedy in acute bronchitis. Certain cases of chronic bronchitis respond to treatment by hexamethylenamin with gratifying alacrity, while others do not. In the latter instance it is presumed that structural changes have occurred in the walls of the bronchi, associated with thickening and calcification of the cartilages, fibrous membrane, and muscular coats so as to preclude the hope of successful treatment by any remedy.

#### SODIUM CACODYLATE IN SYPHILIS.

SPIVAK in the New York Medical Journal of March 2, 1912, reports a study of the results in forty-three cases from the Genito-Urinary Department of the Jefferson Medical College Hospital, in which he used sodium cacodylate. The following conclusions are reached:

- 1. Arsenic in the form of sodium cacodylate is useful in syphilis. While its action is not as rapid as that of salvarsan, it accomplishes results not unlike those of salvarsan. It is very reasonable that it should, because the arsenic content of "606" is thirty-four per cent, while the arsenic content of sodium cacodylate is forty-eight per cent.
- 2. Being sure that the salt is pure, and making a solution of it fresh every day, it is non-poisonous to the human system, even in doses as high as five or six grains injected daily for three weeks, or even for a month; in other words, the human system can take in 100 grains of sodium cacodylate in three weeks with no signs of arsenical poisoning.

There is no albuminuria, no signs of ocular disturbance; the only untoward effects ever noticed were slight shooting pains in the muscles, particularly those of the shoulder, and sometimes this reached to a muscular spasm. There is no reaction at the site of injection.

- 3. The drug should be used for effect, beginning with three grains daily and increasing as results are noted. The drug is cumulative in action, as improvement continues for a week or so after the injections cease.
- 4. The best results are seen in early syphilis. It has a marvelous effect on the initial lesion and on the maculoroseolar eruptions. The action on the papular syphiloderm is somewhat slower, but in large doses is effective. The drug has practically no effect on the adenopathies. Enlarged cervical, epitrochlear, and inguinal glands persist in spite of massive doses. Mucous patches and condylomata clear up readily without any other treatment. The drug has a splendid alterative effect and can be used for that alone in the course of syphilitic

treatment. All patients, whether their lesions were benefited or not, speak of a sense of well-being, of added strength, of a better appetite, and even of an increase in weight. On the rupia and tertiary lesions, sodium cacodylate has practically no effect.

- 5. Immediately after the patient has had his course of injections, he should be placed on mercury, otherwise the external manifestations recur. It would even be well to alternate a course of mercurial treatment with a course of cacodylate injections. The two drugs seem to be synergistic; one has a stronger effect in the presence of the other.
- 6. The effect of the drug on the Wassermann reaction is practically nil.
- 7. The drug should prove to be a useful adjunct in the treatment of syphilis, especially where salvarsan cannot be used, either for financial reasons or through some physical condition of the patient. Sodium cacodylate is cheap, easily prepared, and very easy to administer.

#### CURIOUS CASES OF INCOMPATIBILITY.

In a recent issue of an American pharmaceutical journal attention is drawn to the fact that an incompatibility between a medicine given internally and one applied externally may cause undesirable epidermal manifestations. Reference is made to a case in which hydrogen peroxide was applied externally, while potassium iodide was given internally. The result was a severe burning of the skin, the cause of which was not discovered for some little time. In another instance a colorless tincture of iodine, taken internally, in conjunction with an ointment of ammoniated mercury, externally applied, caused severe irritation of the skin, which was attributed to the toxic action of mercuric iodide. Other illustrations might be given of the importance of avoiding such cases of incompatibility. Thus, sulphur given internally and a solution of mercury used externally may be expected to cause a deposit of black mercuric sulphide in the skin. These instances are of great interest to physicians, as they

afford an explanation of phenomena which might sometimes be attributed to idiosyncrasy or some other cause, except the right one.

Within the last few months an interesting case arose at St. Paul. Minn. A lady had used a certain advertised face-cream for the purpose of removing freckles, and she was horrified to find that her face became variegated in color from yellow to brown and then to black. Since many creams of this nature contain some form of mercury it is probable that the trouble was caused by a chemical reaction between the ingredients of the cream and some medicinal substance she may have been taking at the same time. These illustrations emphasize the danger of indiscriminate selfmedication; they further show that care should be taken not to use mercurial creams when undergoing certain courses of internal medication. The apparently harmless sulphur lozenge or compound licorice powder may cause much chagrin and discomfort, if not danger, when taken into the system at a time when a favorite brand of toilet cream is being used to beautify the complexion.—Lancet, March 2, 1912.

# PHENOLSULPHONEPHTHALEIN IN RELATION TO RENAL FUNCTION IN HEALTH AND DISEASE.

ROWNTREE and GERAGHTY in the Archives of Internal Medicine of March 15, 1912, reach these conclusions:

- 1. The absorption of phenolsulphonephthalein following injection into the lumbar muscles is better than the absorption from the gluteal injection, while the latter is superior to subcutaneous injection.
- 2. Administration into the lumbar muscles is the method of choice.
- 3. Experimentally those diuretics that stimulate the renal cells to increased activity cause some increased secretion of phenolsulphonephthalein, while those that act mechanically produce no increased secretion. Clinically diuretics do not influence the phthalein output.
  - 4. Experimental evidence seems to indi-

- cate that phenolsulphonephthalein is excreted mostly by the tubules, but probably also to a slight extent by the glomeruli.
- 5. The renal cells display a striking specificity in the excretion of phenolsulphone-phthalein.
- 6. The phenolsulphonephthalein as used by them has many advantages over all other functional tests so far proposed.
- 7. It is better adapted for use as a functional test than any other drug previously employed for the same purpose, on account of its early appearance in the urine and the rapidity and completeness of its elimination by the kidney and the reliance to be placed on its findings.
- 8. The method of quantitative estimation of the amount of drug excreted is simple and exceedingly accurate.
- 9. It is of immense value from a diagnostic and prognostic standpoint in nephritis, inasmuch as it reveals the degree of functional derangement in nephritis whether of the acute or chronic variety.
- 10. In the cardiorenal cases so far studied the test has proved of value in determining to what degree renal insufficiency was responsible for the clinical picture presented.
- 11. The test has proved of value not only in diagnosing uremia from conditions simulating it, but has also successfully indicated that uremia was impending when no clinical evidence of its existence at the time was present.
- 12. The test has proved of great value in revealing the true renal condition in cases of urinary obstruction. It is here of more value than the urinary output, total solids, urea, or total nitrogen, and enables the surgeon to select a time for operation when the kidneys are in their most favorable functional condition. The improvement in the renal condition in cases of urinary obstruction following the institution of preliminary treatment is strikingly indicated by this test.
- 13. In unilateral and bilateral kidney disease the absolute amount of work done by each kidney as well as the relative proportion can be determined when the urines are obtained separately.

#### PROGRESS IN ORTHOPEDIC SURGERY.

Bradford (Boston Medical and Surgical Journal, Jan. 4, 1912) quotes from the current literature to the effect that living bone deprived of periosteum, if transplanted, stimulates the regeneration of the periosteum of the bone into which it is implanted.

Experiments with autoplastic or homoplastic bone plugs driven into the femur and tibia to stiffen flail joints have shown that both living and dead bone tissue dies when transplanted and is gradually absorbed, and, as a rule, is sooner or later thrown off, although in certain cases large pieces of bone or portions of a joint have apparently been by healing retained in the transplanted place.

Transplantation of the upper end of the fistula was performed seven months after the removal of the diaphysis of the tibia. Nine months later the lower end of the fibula was inserted into the lower epiphysis of the tibia. Two years later a skiagraph showed great thickening of the transplanted bone.

Lexer has shown a case in which a kneejoint transplantation had been performed three years before, and a second one in which the operation had been done five months before, with the result of a functioning knee. In a third case the upper third of the tibia with the joint surface was removed and a corresponding piece from an amputated limb was inserted. One and a half years later the action of the joint was reported as normal.

Judet as the result of experimental investigation found that transplantation of the whole knee-joint, the cartilage having been destroyed, resulted in a stiff joint. The amputation and reimplantation of the leg of a dog, the operation having been done in the middle third of the thigh, resulted in ununited fracture with atrophic ulcers three months later, though the circulation was good.

Steida reports three cases of free bone transplantation. He comes to the conclusion that bone can be used only for small defects, that the continuity of the bone should not be interfered with by the inser-

tion of ivory or nails. To secure the life of the periosteum he recommends the transplantation of the periosteum with a thin portion of bone, but the transplanted periosteum-covered portion of bone needs a support, and more bone substance should be transplanted with the periosteum. This furnishes a support for the development of new and strong bone.

Lexer notes that skin flaps, when transplanted, are found to heal better without fat than with it; it is important that asepsis should be thorough and that the wound be allowed to bleed somewhat so that the tissues contain a sufficient amount of blood. The skin of animals cannot be used to take the place of the skin of man, at least for the purpose of covering defects. Fetal skin flaps heal better than those from an adult. By joint transplantation, toes can be substituted autoplastically for the fingers. The attempt to transplant a whole limb has not been successful, though fascia, bone, and joint have survived well. The skin and muscles have not.

Transplantation of fascia is reported for the cure of a drooping scapula from muscular paralysis. A 20 cm. piece of fascia, 4 to 5 cm. wide, was taken from the fascia lata and inserted in the middle scapular region above the spine and fastened to the tissues of the back muscles and deep spine muscles close to the spinal column. During the suturing the shoulder was pressed by an assistant into a normal position. A complete cure is reported to have taken place.

The success of tendon transplantation, especially the periosteal method when silk artificial tendons are used, depends upon a number of important details. The most important points to be observed are absolute asepsis, exact placing of the thread upon the tendon, the passage of the tendons through the subcutaneous fat or tissue, and exact suturing on the periosteum of the transplanted tendon with proper tension, and especially a careful aftertreatment.

Snapping finger depends most frequently upon an alteration in the tendon sheath or tendon, appearing in the form of a fibroma, fibrous thickening, or vascular tumor of the tendon, or as an alteration in the tendon sheath, a narrowing through fibrous bands and tumors, granulation tissue, etc. Less frequently the symptoms are due to alteration in the joint, arthritic changes, roughness, etc.

Snapping hip is usually due to the slipping of the cristofemoral tissue over the There is at times an actual slipping of the head due to an alteration of the posterior edge of the acetabulum. For the cure of this condition a posterior median incision was made over the lower border of the gluteus maximus, the semimembranosus was exposed, and a tendinous slip was taken from its outer border, still attached above to the tuber ischium. second incision over the upper side of the trochanter was made and a hole drilled through the latter. The tendinous slip from the semimembranosus was then drawn through this hole, and sutured subperiosteally to the outer aspect of the trochanter. The patient after three months had no return of symptoms.

Codivilla is of the opinion that section of nerve roots in infantile spastic paralysis is to be undertaken only in patients with strong muscles, normal trophic condition, and where the resection is not technically too difficult. It is easier in the dorsolumbar rather than the lumbosacral region.

Biesalski believes that only the most severe cases should be subjected to this operation. The cases that are able to walk even with difficulty should not be operated upon, nor should those in whom the spasm is not constant when the patients are not in bed.

He selects for the site of operation the first sacral rather than the second, in order that the cut shall not come too near the anus. Tenotomy of the muscles is often necessary, and thereafter careful muscle training.

Allison records as a substitute for nerve section the injection of 60- to 80-per-cent alcohol into the peripheral nerves, and reports much betterment following this procedure.

#### GASTROJEJUNOSTOMY.

MAYO (American Journal of Surgery, January, 1912) regards as one of the most important contributions to the technique of gastrojejunostomy the application and the popularization by Moynihan of the holding clamps for bringing the jejunum and stomach in apposition to prevent soiling the field of operation. Since the no-loop operation is done upon parts somewhat deeply situated, the clamps are a convenience, and they have retained their popularity in nearly all of the American clinics, although they have been abandoned in many foreign clinics because of the occasional hemorrhage from the suture-line after they were re-This hemorrhage appears as a hematemesis or melena some hours after the operation, as the blood accumulates in the gastrointestinal tract. In a few cases in the writer's early experience he supposed that the bleeding came from the ulcer and was due to operative manipulation, until he was obliged to reopen the abdominal incision in two cases for the purof checking hemorrhage within eighteen hours after operation. The stomach was brought up and its anterior wall opened by a longitudinal incision, exposing the ulcer, which was found dry in both cases, the hemorrhage coming from the posterior suture-line of the gastrojejunostomv.

In order to insure against this accident Mayo began using a third row of catgut sutures, uniting the mucous membranes along the posterior suture-line. The accident is not so likely to happen on the anterior wall, and since applying this mucomucous stitch to the posterior line there has been no bleeding following gastrojejunostomy in any of his cases.

Moynihan and Littlewood advised trimming off the redundant mucosa of the margins of the incision uniting the stomach and intestine. The writer has usually followed Ochsner's technique in this respect—that is, placing the second row of sutures before opening the cavity of the stomach and jejunum, thus preventing the posterior suture-line from being soiled. The mucous

coats of the stomach and intestines are opened near the outer margin, which throws a little flap of redundant mucous membrane toward the suture-line, and this is brought together with the third row of sutures mentioned above. However, should there be redundant mucosa it will be wise to trim it away. Since silk or linen is slow to be cast off, Mayo uses chromic catgut for the inner and linen for the outer row of sutures. He has seen silk sutures hanging in the gastrojejunostomy eighteen months after operation. In gastrojejunostomy for carcinoma, however, he uses linen for both layers of sutures, because union is slow in these cases and the suture must last long enough to insure firm union.

There has been a great deal of discussion as to the direction the gastrojejunostomy should take on the posterior wall of the stomach. The writer agrees with Moynihan that too much attention has been paid to this detail. For a number of years in the clinic at St. Mary's Hospital the opening has been slightly oblique in direction, from right to left, and from above down (vertical oblique). Moynihan uses a vertical opening, and in the few cases in which the Mayos have used this opening the results were satisfactory.

A mesocolic band often extends downward upon the upper jejunum at its origin. If such band or bands exist they should be trimmed backward, since, if the free portion of the jejunum beyond the band is used, a considerable loop of intestine will lie above the anastomosis and the gastrojejunostomy will not be of the no-loop variety. It can be stated within reasonable limits that the closer the gastrojejunal opening is made to the origin of the jejunum, the less danger there will be of bile vomiting.

In the average case in which gastrojejunostomy is performed, the transverse mesocolon is torn through in the avascular part near the center of the vascular loop of the middle colic artery. Occasionally the transverse mesocolon will be found to have two vascular arcades, due to the division of the middle colic vessel into a right and left

branch; the right anastomosing with the right colic and the left with the left colic artery. In operating, the larger scale is usually chosen, but distinct preference is given to the left arcade, other things being equal.

The torn margins of the gastrocolic omentum in the average case should be fixed by three or four sutures to the suture-line of the gastrojejunostomy. sutures should pick up the peritoneum of the mesocolon a quarter of an inch above the rent, and after fastening down to the suture-line, the torn margins should be neatly tucked in so that no opportunity will be afforded for the formation of secondary adhesions. If the mesocolon be fat the torn margins of the opening should be attached to the stomach at least three-fourths of an inch from the gastrojejunostomy with three or four sutures to avoid the formation of a ring or collar-like band at the site of the operation. Two cases have given the writer trouble from this cause.

Gastric ulcers should be excised and duodenal ulcers infolded with sutures. In some cases it is impossible to excise a gastric ulcer without great risk, and in the occasional case in which the duodenal ulcer is already roofed in by adhesions, it may not be advisable to infold it.

Closure of the pylorus has been advocated as a routine procedure following gastrojejunostomy. Sutures placed in the outer wall of the stomach and duodenum in such manner as to infold the pylorus produce mechanical obstruction only temporary in character. Clinically and experimentally, nothing short of complete division of the pylorus, turning in the end of the stomach and the end of the duodenum, can be expected to give permanent results. Occasionally Mayo practices some method of closure of the pylorus, but as a rule, if the indications for gastrojejunostomy are clear, the operation will be successful without closure, and if the choice of operation has been bad for the patient, it will not be improved by the addition of closure of the pylorus.

The preparation of patients for gastro-

jejunostomy is simple. If there be marked obstruction with food retention it will be wise to empty the stomach twice a day with the stomach tube for a few days until it recovers its tone.

The patient is admitted to the hospital about 2 o'clock the day preceding the operation. At 3 o'clock one to two ounces of castor oil is given, and at 5.30 a light The castor oil is very effective, and, unlike salines, does not produce watery, exhausting stools. It is also more thorough, and if an excess be given, it merely passes off. A bath is given about 8 o'clock in the evening. In the morning the field of operation is carefully shaved, using water without soap, and allowed to become dry. If the patient is in an exhausted condition 1/6 grain of morphine is given. Ether is administered by the drop method. The field of operation is cleaned with benzine, which removes all grease, dead epithelium, and extraneous matter. The benzine dries rapidly and is followed by a coating of three and one-half per cent solution of tincture of iodine, which should be made fresh within a week, since old tincture of iodine undergoes chemical changes that are irritating to the skin.

After the operation the patient is placed in the semisitting posture on a buttock rest, which is merely a sling of gauze wrapped with sheet and fastened to each side of the head of the bed. The patient is propped up by pillows and kept in this position by the buttocks resting in the sling. During the first night hot water is allowed in moderate amounts, an ounce or two at a time, unless the patient be nauseated. If there be much pain a hypodermic injection is given of 1/100 grain of atropine and 1/6 grain of morphine. If greatly debilitated, the patient is given 10 to 15 minims of camphorated oil, hypodermically, from four to six hours apart.

Immediately after placing the patient in bed rectal salines by the Murphy method are commenced, and four to six quarts are given during the first twenty-four hours. Patients are allowed albumen-water and a little weak tea the day following the operation, and on the second day cereals and soups are given. At the end of the week a moderately full diet is permitted, advising the patient to masticate the food thoroughly.

Patients are up at the end of a week, and usually leave the hospital in from ten to twelve days.

An acute attack of dilatation of the stomach with great distress, vomiting of bile, etc., may occur along in the second or third week. Emptying the stomach with the stomach-tube two or three times a day for several days is the most effective remedy for this condition.

Occasionally the patient will have distressing symptoms in the stomach not due to bile, coming on some weeks after operation. If these symptoms are mild they may be relieved by giving an ounce of olive oil before meals. In the more severe cases rest in bed for a few days on a milk diet will almost always be efficient.

#### TREATMENT OF CLEFT PALATE.

MURRAY (Lancet, Nov. 25, 1911) advises closing harelip at the age of three months, and closing the palate by Langenbeck's method when the child is three years old. He is opposed to the Lane turnover flap method on the basis that it leaves a rigid soft palate, and states that in the exhibition of late results there can be no doubt as to the respective merits of the Lane as compared to the ordinary procedure. such demonstration was held there were several cases in which a complete cleft of the hard and soft palates had been closed by the ordinary plan during childhood, and in which the speech was natural, and the words "British constitution" could be repeated clearly and distinctly. On the other hand, in any case in which the cleft had been closed by Lane's method, articulation was so very imperfect that it was difficult to understand what was said. In all cases in which articulation was distinct the soft palate was seen to be normal in form and in movement: in all cases in which Lane's method had been used the soft palate was short, stiff, and stationary, accounting for

the defect in articulation, for which, unfortunately, no remedy can be supplied. The evidence obtained from patients who had been operated upon was overwhelmingly in favor of closing the cleft in the ordinary way, whilst the extremely unsatisfactory articulation of patients operated upon by the turnover flap method proved that it is wrong in principle, defective in practice, and to be utterly condemned.

With Brophy's operation the writer was not at all successful. In one case, instead of the bones sliding toward each other on the same plane, and so obliterating the fissure in the palate, they hinged at the side of the fissure in such a fashion that any further pressure would only have resulted in the alveolar margins of either side meeting in the middle line.

As to the Langenbeck or ordinary operation, when the fissure is narrow and involves the soft palate only, operation may be performed with success during infancy, but it is better to wait until the second or third year. The author prefers to operate in the summer months, and considers the cleft palate season opens on May 1 and closes October 1.

The mouth and nose should receive daily careful cleansing. Chloroform is preferred as an anesthetic. The child should be lying on the back with the head and shoulders raised. The whole cleft is closed at one sitting. The edges of the fissure are pared obliquely, thus securing broad raw surfaces. The blood and mucus are sucked away from the mouth and throat by a glass syringe which has a piece of rubber tubing attached. In order to be quite sure that the edges of the wound are everted and raw surfaces brought together, one or two button sutures are employed. Silver wire and fine silkworm-gut are used for suturing, and at times to relieve tension the writer surrounds the flaps with tape impregnated with Horsley's wax. After the operation the stomach is frequently washed out, the stomach-tube being passed through the nostril. The after-treatment is almost entirely a question of nursing, the chief points being to keep the mouth clean and

to maintain the child's general health. In children over four years of age nasal feeding may with advantage be used during the week following the operation, but in younger children it is impracticable. In ordinary mouth feeding milk should not be given, for it clings to the stitches, is difficult to wash away, and undergoes fermentation changes. Half an hour after each feeding the palate should be cleansed by syringing with warm water. If the child will not permit this, a drink of water must be given at the conclusion of each meal.

## CURE OF FISTULA IN ANO WITHOUT INJURING THE SPHINCTERS.

MACKENZIE (Northwest Medicine, November, 1911) describes an ingenious and successful method of curing anal fistula without injury to the sphincter.

The patient is prepared in the most careful way as for any major surgical operation on these parts. The sphincter is completely dilated. The internal orifice of the fistula is minutely examined, and with a proper instrument is very cautiously dilated. After dilatation the mucosa is uplifted and pared with curved scissors in the direction of the long axis of the bowel, and with a small knife or fine scissors the circumference of the muscular laver is then trimmed and vivified. If need be, the opening may be incised or split in the direction of the circumference of the sphincter. has been done a few interrupted sutures of iodized catgut are introduced in the muscular layer at right angles with the sphincter, tied and divided. The mucous membrane is then sutured with interrupted catgut or silk sutures, properly spaced. If more than one orifice exists, of course, the same procedure is followed.

A flap is made on the side involved, beginning by making a small semilunar incision just beyond the border of the external sphincter, dividing the parts down to the fistulous track, the latter being divided flush at its point of emergence from the bowel. The incision is extended from both ends of the first incision outward and made

iarge and deep enough to include, if possible, under the eye all available and accessible branching tracks. The exigencies of the case may require sometimes the lifting of one or other of the buttocks in its entirety. In one case it was necessary to make a complete flap and partial resection of both buttocks in order to reach the deepest and most distant branching tracks.

The opposite side of the rectal opening is now attacked, and, after all doubtful tissues have been removed, the rectal walls are infolded once or twice over the line of suture within. The greatest care must be exercised in removing all doubtful tissues. If need be, the cautery could be used for their complete destruction, or substituted entirely for the suture of these parts.

The exposed flap is next attacked with knife or large pointed scissors curved on the flat, and the original track, its branches, and the entire fistulous zone, including every branching track, resected. Careful search will be made in the ischiorectal fossa and perirectal spaces for any concealed tracks.

The whole field is then carefully flushed with normal salt solution, and, if need be, antisepticized and the fat layers sutured with buried catgut so as to close all dead spaces. In many cases the entire wound may be closed as in the case of breast amputation, or a small drain may be left for twenty-four or forty-eight hours.

#### A PROTEST AGAINST THE INDISCRIM-INATE USE OF THE ORGANIC COM-POUNDS OF SILVER IN OPH-THALMIC PRACTICE.

THEOBALD (Johns Hopkins Hospital Bulletin, November, 1911) states that whatever be the explanation, whether due to their chemical composition, the greater freedom with which they are used, or to their supposedly greater penetrating power, there can be no doubt that the organic compounds of silver—at all events, those with which the author is familiar, protargol and argyrol—are responsible for many more cases of conjunctival argyria than ever was, or is, silver nitrate.

Before these compounds came into use, argyria of the conjunctiva was a rare condition—practically never seen except in old cases of trachoma. Now it is relatively common, and is met with in acute affections, in which the silver treatment has been of comparatively brief duration.

He states that he has never produced a case of ocular argyria from the use of silver nitrate, and expresses regret that he cannot say the same as to the newer silver compounds. In several of his cases of gonorrheal conjunctivitis in the adult decided staining, especially of the bulbar conjunctiva, has resulted from the employment of protargol, and the same has happened in a case of acute trachoma after only a few weeks' treatment.

Theobald states that he has also observed a number of cases of similar character which have occurred in the practice of his confrères. A well-known physician of Baltimore was given a five-per-cent solution of argyrol for a mild chronic conjunctivitis. As its action was beneficial, his wife—in need only of glasses for the correction of a decided fault of refraction—also began to use it, and the two continued to employ it, p. r. n., until the physician had acquired one of the most marked cases of argyria the writer has ever seen, and his wife's eyes had become conspicuously stained.

It is, therefore, not against the use, but against the indiscriminate—or, perhaps, indiscriminating—use, of the organic silver compounds that he protests. When a remedy is at hand that is, at least, as efficacious as they are in the condition to be dealt with, that is cleanly, and that cannot by any possibility produce the untoward consequences to which they not rarely give rise, common sense would seem to dictate that it be given the preference.

These observations apply with especial force to the now almost, it would seem, universal habit, particularly among the younger generation of ophthalmologists and of general practitioners as well, of employing argyrol or protargol in the treatment of acute and chronic catarrhal conjunctivitis. This practice, in the writer's

judgment, and it is based upon abundant observation, is wholly indefensible, since we have a remedy—in a collyrium containing half a grain of zinc sulphate and ten or twelve grains of boric acid to the ounce—that is cleanly, and that is not simply as efficacious, but is more surely and more promptly efficacious in these conditions than either of the silver compounds mentioned.

## TREATMENT OF RINGWORM OF THE SCALP.

RIDDELL (Glasgow Medical Journal, February, 1912) deprecates the routine use of x-rays because in the ionic method of applying antiseptics we have a means of carrying the drug right into the hair roots, and thus destroying the vitality of the spores in situ. The appliances necessary are simple and inexpensive, consisting of a small switchboard and electrodes. a public electric supply is not available, a battery of twenty or thirty cells is sufficient. The procedure is as follows: The child's head is shaved, or the hair cropped short all over. A solution of the drug to be used is rubbed well into the affected parts. Folds of lint (10- to 16-ply) are soaked in the solution and applied evenly to the surface; over this the electrode is placed and secured by a few turns of bandage. It is important that the lint should overlap the diseased area, and that it should be thoroughly moistened.

The electrode may be made of any convenient metal. Copper gauze is pliable and adapts itself easily to the surface. It should be large enough to cover the diseased area, and the contact both between the head and the lint, and between the lint and the electrode, should be of equal pressure all over.

One pole of the supply is attached to the electrode, which is on the head; the other is connected to a water-bath in which the child's arm or foot is immersed, or to a large well-moistened pad, which may be bound to the arm or leg.

The current is now slowly turned on, and gradually increased until the patient is beginning to feel slightly warm on the scalp. After a few minutes it will be found that the current can be increased without discomfort to the patient, and it is the object to increase it as much as possible short of actual discomfort. When the area under treatment is large, a child usually allows 10 to 20 ma. to be used.

Each sitting should be as prolonged as possible; from 40 to 50 minutes at one sitting with a given current is of greater value than three or four of only fifteen minutes with the same current. This arises from the nature of transference of ions.

When an electric current is made to pass through a solution of certain substances it does so in accordance with definite physical laws. The dissolved compound is split up, and that part representing the metal (in a salt, for example) travels away from the positive pole, while that representing the acid radicle travels away from the negative pole. The particles continue to travel only so long as the current is flowing, and therefore the more prolonged the sitting the deeper into the tissues will the drug travel.

The solution used is one per cent of mercuric chloride or one per cent of iodine in water, a sufficient quantity of potassium iodide being added to make the iodine soluble. Chloroform, iodoform, and glycerin interfere with ionization. The quantity of the drug carried into the skin depends not upon the concentration of the solution, but upon the strength of the current and the duration of the sitting, and for a given current-density different elements have not the same rate of transference.

The treatment should be repeated two or three times a week. It is well to have the head washed daily or every other day with an antiseptic, such as sulphur, B-naphthol, and green soap mixture commonly prescribed. If oil is used on the scalp it must be thoroughly removed before making ionic applications.

The average number of sittings for each of the author's cases was thirteen. When the sittings were continued for half an hour or more the average number was nine. Three cases had a very large number of treatments—two over fifty, one sixty.

In favor of the x-ray it may be said that one or two visits are all that are required, and failure is almost unknown. The child is, however, shedding hair for weeks, and it is practically a certainty that a small percentage of children are going to have permanent bald patches left on their heads.

In favor of the ionic treatment is the absolute safety, both as to possible late effects and baldness, and the simplicity of application. The treatment can be carried out by the family physician.

# A NEW OPERATION FOR FIXATION OF THE KIDNEY.

Bell (New York Medical Journal, Jan. 20, 1912) describes an ingenious modification which theoretically, at least, offers some advantages. His modification is incident to the fact that a combined Edebohls and Isaacs operation which he formerly used, by which the kidney has been suspended from the last rib to the split and inverted capsule and has been sutured to the lumbar muscles, has given him a large percentage of failures. The suture he advocates is as follows:

An incision three inches in length is made two inches external to the spinous processes of the lumbar vertebræ, vertically downward from the lower border of the twelfth rib, through the skin and fascia. fibers of the outer portion of the erector spinæ are bluntly separated and the quadratus lumborum is incised. We are now down to the posterior layer of the transversalis fascia. This is incised carefully about one inch from its spinous attachment and the divided edges are caught with artery forceps. The kidney is then enucleated in the usual manner and the perirenal fat is excised posteriorly, internally, and externally, but not inferiorly. It is important that the fat for at least half the depth of the kidney be removed. Two sutures, after the manner of Brödel, are now placed at either pole of the kidney at the internal and external borders, the needle being left on each. For the present these are not tied.

Two parallel incisions, one and one-half inches in length and one inch apart, are now made longitudinally through the renal capsule, and the intervening capsule is elevated from the cortex by blunt dissection.

The kidney is now returned to its fossa and is held in position by means of gentle traction made by an assistant upon the untied sutures. A strip of the transversalis fascia corresponding in width to the length of the elevated portion of the capsule is now cut and passed as a strap beneath it and is sutured with chromicized catgut to the corresponding portion of the spinal attachment of the fascia.

The kidney, now suspended by a strap of fascia, is further reënforced by passing the Brödel sutures through the quadratus lumborum in the usual manner and tying them over the muscle. The wound is closed in the orthodox manner. The patient is kept in bed three weeks, until adhesions have formed betwen the fascia and the capsule and cortex of the kidney.

While this operation takes advantage of the old method of suspension for the purpose of holding the kidney in position temporarily while the process of healing is going on, at the same time it places the organ in a suspensory ligament from which it is almost impossible for it to escape.

#### MOBILE CECUM AND CHRONIC AP-PENDICITIS.

WILMS traces the attacks of pain grouped under the term of chronic appendicitis to the following disturbances: (1) Adhesions in the neighborhood of the appendix or ascending colon, causing traction on the intestine when it is full; or (2) kinks or twists of the intestine at the caput coli or hepatic flexure, causing transient obstruction. Cæcum mobile, or the condition termed by other writers as typhlospasm, typhloatony, or typhloectasia, has nothing whatever to do with these disturbances, these as a rule being due to the stagnation of intestinal contents over a long period of time in the cecum. The contents may remain in the cecum for twenty-four hours or more, as demonstrated conclusively by Roentgen pictures. Their consistency becomes thick, and the rest of the colon is forced to exert greater power to push these thickened contents on. The patients suffer with habitual constipation. As a result of this stasis, an antiperistaltic action takes place in the colon, together with a spastic condition due to the irritation, thus causing the attacks of pain. These spastic contractions, which go together with a lengthening of the cecum, result in traction on the movable cecum and its mesentery, or when the appendix and its mesentery are relatively short, traction is brought on the mesenteriolum. The pain of chronic appendicitis is thus traction pain, aggravated by slight inflammatory changes in the environment of the mesenteric nerves.

Excepting palpation (gurgling tumor), the diagnosis is positively established by means of an x-ray picture. Wilms recommends three pictures, 4, 8 to 10, and 24 hours after the administration of bismuth. His results with cecopexy show that not only is the pain relieved, but that the chronic obstipation also is cured. Not less than 75 per cent of the operated cases had after this treatment normal bowel movements, whereas formerly their bowels would move only after cathartics. In uncommonly large ceci, Wilms recommends, instead of cecopexy, a shunting of the colon by anastomosing the small intestine lying over the cecum to the transverse colon. Only those cases should be operated on in which the obstipation has not yielded to thorough internal treatment-i.e., in severe cases accompanied by pain.

Dr. Sonnenberg observed that the surgical treatment of obstipation and its complication is still upon an uncertain foundation. Mobile cecum is not frequent, by itself not pathological, and the methods of anchoring it vary considerably. The diagnosis by the x-ray picture is not trustworthy, as the form, location, and distribution of the bismuth cecal shadow dependentirely upon how soon after the ingestion of the mixture it is observed. The accumulation in the beginning of the large in-

testine in itself is not pathological. The findings mentioned by Wilms can be observed in other forms of obstipation as well as in healthy individuals. The quality and the quantity of the ingested substance must be borne in mind in order not to confound physiological with pathological phenomena. Cæcum mobile can be recognized only when clinical evidences are present, pointing to catarrh and inflammation, from the seat of Then there are present a typhlocolitis. symptoms of catarrh of the large intestine, with varying obstipation and diarrhea, accompanied by typhloatony. Altogether a patient is better off with a cecum mobile than one with a fixed cecum. It is difficult to see what advantage is gained by cecopexy. Unquestionably, many patients who have typhlocolitis are operated upon for appendicitis, which is not present. On the other hand, many of these patients who are operated upon for chronic appendicitis, by their appendectomy are cured of their typhlocolitis. Typhlocolitis belongs to the domain of internal therapeutics, and only in extraordinary cases is operation called for. It is usually only part of the inflammation of the large gut, and the cause is often elsewhere-for example, at the splenic flexure, where obstruction is present, with damming back of the colonic contents. We are not justified in making a clinical entity of mobile cecum and its symptoms, and unless we are more familiar with the physiology of the large intestine than at present we should avoid shunting, resections, etc. The speaker has not seen much benefit derived from these operations.

Klose said that since 1904 the Frankfort Surgical Clinic has recognized the existence of cæcum mobile as described by Wilms. During this time 154 cases have been operated on, with a complete cure in 89 per cent. Klose does not agree with the standpoint of Wilms that the mechanical interference with the progression of intestinal contents due to torsion of the hepatic flexure plays the greatest rôle in these cases. One gets secondarily hypertrophy and atrophy of the walls, inflammatory changes in the region of the cecum and as-

cending colon, as well as chronic torsion and displacement of these organs. The habitual torsion is, according to observations, the most important and frequent cause of acute appendicitis. Cecal torsion may also give rise to floating kidney and infective pyelitis.

Klose reports experiments on the cadaver to support this mechanical theory. The cecum and entire ascending colon are fixed to the lateral abdominal wall, in order to prevent rotation. More recently he has gone so far that, in marked cases of displacements and severe enteroptoses, he has fixed in place the entire large intestine, liver, and spleen with good results.

Dr. Goebell since 1908 has performed 15 cecopexies and three cecoplications for cæcum mobile. Only those were grouped under this head in which there was a freely movable cecum, and where there existed at the juncture of the cecum and ascending colon adhesions with occasional kinks.

The cecopexy was done by sewing the lateral band to the transverse fascia by means of silk thread. Only when the caput coli was very distant from the ileocecal junction, after doing an appendectomy, a plication of the cecum was performed. Of 15 operated patients, 10 were entirely cured. Good results were obtained only when the cæcum mobile was the primary cause of the obstipation.

Dreyer stated that in order to clear up the doubtful subject of cæcum mobile, two questions must be answered: (1) Is a mobile cecum pathological? (2) Does the Wilms cecopexy restore the physiologic condition?

In answer to the first question, he notes that out of a large number of autopsies he has found in 67 per cent a movable cecum. It seems scarcely possible that this condition can be pathological and, as Wilms states, the primary cause of obstruction. In answer to the second question, all know that the pregnant uterus in its rise displaces the entire intestines upward. In the latter months of pregnancy the cecum is found far above a line joining the anterior superior spines of the ilium.

With the Wilms cecopexy, the head of the cecum is fixed deep in the pelvis so as to reach the outlet, in order that, as Wilms describes it, the retroperitoneal pocket shall take up all of the "long" movable cecum, so that no kinking can take place. danger here is that during pregnancy a loop is formed, with the ileocecal valve as the angle and the intestine as the parallel arms. This would make great difficulty for the passage of fecal matter. It is interesting to note that of the 52 cases Wilms has operated on for cæcum mobile, 75 per cent were in women. In the autopsy room only 11 per cent of women were found to be free from cæcum mobile, but never was the cecum fully movable to the site of a possible cecopexy. The clinical relation of cæcum mobile to chronic appendicitis is not yet sufficiently clear.

After removing the appendix, Voelker sews together the middle and outer bands with a continuous suture for about 8 centimeters. By this means the anterior portion of the cecum is invaginated. If the greater part of the cecum is below, and if the bands are short, the cecum can be shortened by the suture. At the same time the space under the mouth of the ileum is lessened and there can result no accumulation of contents. Likewise a partial fixation is obtained, as the anterior portion of the movable cecum is contracted. On the plaited portion is reflected the posterior surface. This plaiting is indicated only in large dilatations. In twelve cases satisfactory results have been obtained. Especially in one case after the plaiting a previous long-existing temperature disappeared. The case is a good example, as the appendix had been removed previously, and the plaiting only was done. Stenosis of the cecum or ileum can be avoided with care.

Dr. Stierlin reported the after-results of three cases of shunting of the cecum and ascending colon for severe obstipation of the ascending type. Two of these cases were operated by Professor Wilms and the third by Professor de Quervain. In the three cases, before the operation, the bismuth shadow persisted for twenty-four to forty-eight hours in the cecum and ascending colon and lower down in the intestine in the form of fecal masses. After operation no shadow was visible after twenty-four hours.

Disregarding the x-ray pictures, the clinical results are satisfactory. In all the cases the obstipation has disappeared, the patients having daily movements. In the case operated upon by de Quervain, plication of the shunted colon was done, making it very narrow at the hepatic flexure to allow for drainage of its secretion, yet permitting no return flow of the feces.

The indication for shunting as well as the improvement after operation was shown by the x-ray pictures.—Annals of Surgery, January, 1912.

#### CONGENITAL PYLORIC OBSTRUCTION.

LOWENBURG (New York Medical Journal, Jan. 20, 1912), after a discussion of the symptomatology and diagnosis of congenital pyloric obstruction, advises as conservative treatment lavage twice daily, with a warm solution of sodium bicarbonate, one drachm to the pint of water, and most careful dietetic supervision. If milk formulæ increase the vomiting resource should be had to cereal waters, alone or combined with animal broths or with condensed milk, etc. Whey, plain or combined with a little wine or cereal water or meat juices, may be of assistance. Kellar's malt soup and peptonized milk are also good. In fact, any food or food combination that appears to be non-irritating and sustaining may and should be employed. Food should be given in the smallest possible quantities, from a half to one drachm every hour or so. It is better that an ounce or two given over twenty-four hours should be retained than eight or ten ounces should all be vomited. As conditions indicate, the quantities may be cautiously increased. In some cases, associated with much fermentation, vomiting is lessened by using a liberal amount of lime-water with the food, from ten to thirty per cent. We should also not forget the use of sodium citrate with all milk feedings. In some instances it does good to suspend mouth feeding altogether, substituting rectal enemas of pancreatized milk, merely continuing the lavage, and the administration of from ten to fifteen minims of Chapoteaut's solution of strontium bromide. In some cases an occasional meal per rectum in association with mouth feeding is of great assistance. In conclusion it may be said that as perfect hygienic surroundings as it is possible to secure and the advantages of skilled nursing should be given to all these cases.

In deciding as to surgical intervention three factors are concerned, namely, the weight, the strength, and the character of the constipation. Vomiting has very little bearing on this point, for in many cases that end in recovery it continues with more or less emphasis for some time after. In order to give the matter some definite shape Lowenburg offers this rule as a guide in deciding upon surgical interference in this type of cases: If a small amount of food is retained and if the weight remains stationary, or if there is a slight weekly gain, or the strength does not appear to be fast ebbing away, and if together with this we have an occasional fairly large bowel movement, we are justified in waiting, even in spite of the continuation of vomiting. however, no food at all is retained, and if there be a progressive and continuous loss of weight and strength with increasing constipation-indicating more or less spasmthese cases, approaching the type of complete obstruction due to hypertrophy, should be operated on before the degree of asthenia becomes too great.

## TREATMENT OF CARCINOMA OF THE RECTUM AND PELVIC COLON.

MILES (Glasgow Medical Journal, February, 1912) notes that he has never seen any benefit derived from either radium or the x-ray in the treatment of cancer, and that surgery is for the present our only hope. He calls attention to the divided opinion concerning the appropriate operation for rectal cancer, one set of surgeons

strenuously advocating the perineal methods of excision and the other leaning toward the combined abdominoperineal. He further observes that the study of the spread of cancer of the rectum, whether it be made in the post-mortem room, by the aid of the microscope, during the performance of primary or secondary operations, or at the bedside among patients who are suffering from inoperable cancer, is the only guide by which we may hope to fashion operative procedure in accordance with the dictates of pathology.

As to the degree of malignancy of cancer, the type of involvement is the adenocarcinoma, of which there are three distinct varieties which differ considerably in virulence. In one, a somewhat rare form, the papilliferous carcinoma, the neoplasm appears to expend its energy mainly in surface proliferation, tardily infiltrating the muscular coat of the bowel. Consequently, this kind of growth increases rapidly in size, soon blocks the lumen of the bowel, and gives rise to symptoms, chiefly those of obstruction, which lead to comparatively early detection.

A tumor of this kind may encompass the whole of the circumference of the bowel before marked permeation of the bowel wall has occurred. These growths, therefore, when freely removed, seldom give rise to recurrence, and are particularly hopeful cases so far as prognosis is concerned. Unfortunately, they are not often met with.

The second variety, the typical adenoid cancer, is not so rapid in its surface growth, breaks down early into an excavated ulcer, and very soon permeates the wall of the bowel, extending widely into surrounding tissues. In examples of this variety of neoplasm, by the time that one-half of the circumference of the bowel has been encompassed, permeation of the muscular coat has already taken place; when more than one-half of the circumference is involved extension of the disease into the perirectal tissues has occurred. These growths are very prone to recur after removal.

The third variety—the colloid cancer—is a degenerative phase of the preceding. The growth increases rapidly in size, breaks down early, leading to deeply excavated ulceration, and infiltrates widely. It always recurs after perineal methods of removal.

Cancer of the rectum, when observed in an early stage, is confined to the mucous membrane and submucous tissue. The growth is sessile and readily movable upon the subjacent muscular coat of the bowel. The mobility in this stage is such that, when situated within three inches of the anal margin, the growth may be readily hooked down by the examining finger and made to protrude through the anal orifice.

It is impossible to determine how long a growth, in the preulcerative stage, may have existed prior to detection, because there are no data available; but this much is certain, ulceration of the surface takes place early, and the growth becomes firmly fixed to the muscular coat of the bowel long before half of its circumference has been encompassed.

When permeation of the whole thickness of the wall of the bowel has occurred, further spread of the disease takes place in the perirectal tissues.

The spread of a cancerous tumor of the rectum, then, is both intramural and extramural. The intramural spread takes place chiefly in the submucous lymphatic plexus, though to some extent the muscular and serous coats of the bowels, especially when the growth is situated in the terminal portion of the pelvic colon, are also permeated. This spread is both visible and invisible to the naked eye.

The visible spread may be recognized as a pearly-white thickening of the bowel wall. Often it extends only a few millimeters beyond the obvious surface margin of the growth, so that when the bowel is divided at a distance of about an inch either above or below the margins of the growth, apparently healthy and uninfiltrated bowel wall is seen. Occasionally this pearly-white thickening is observed to extend throughout the length of the bowel for several inches.

The invisible spread is of far more con-

sequence than the foregoing, because it cannot be readily detected, and may therefore be thought not to exist. That it may exist in some instances throughout many inches of the length of the bowel wall, both above and below the primary growth, has been very clearly and unmistakably demonstrated by Mr. Sampson Handley, whose work with the mucicarmine method of detecting cancer cells which are undergoing mucoid degeneration is now so widely known. The demonstration of this invisible spread, however, cannot be made in all cases, probably owing to the fact that the cancer cells do not, in every case, undergo mucoid degeneration, but this does not necessarily disprove the existence of this kind of spread.

Clinically, the frequent experience of recurrence taking place in the proximal end of the gut after perineal excision supports Sampson Handley's view strongly.

The extramural spread, like the foregoing, is both visible and invisible. The visible spread, in an early stage of development, can only be recognized during the performance of primary or secondary operations. It cannot be made out in cases before operation, because it is not sufficiently developed to produce fixation of the bowel or diminution in the mobility of the Easily recognizable extramural spread may exist without interfering in the smallest degree with the mobility of the Visible extramural spread may exist either as a continuous spread from the point of permeation of the bowel wall. or as metastases situated at a considerable distance from the primary focus. The invisible spread is much more difficult to determine.

From clinical observation of recurrences after operation, these cancer cells invade, even in comparatively small and early growths, the lymphatic areas to a distance far beyond the limits of the visible spread, and, consequently, it is imperative that a complete and comprehensive removal of all the tissues comprising these lymphatic areas should be carried out in every case, no matter how limited the primary growth may be. The lymphatic areas are three in

number, the zones of downward, lateral, and upward spread.

In the zone of downward spread the tissues contained in this lymph area are the perianal skin, the ischiorectal fat, and the external sphincter muscle. Anatomically there is a free intercommunication between the lymphatic plexuses of the wall of the rectum and those contained in the structures mentioned above: and, consequently, it is easy to understand how a cancer cell, detached from the main growth, may be carried by the lymph stream to some distance, its migration being arrested at any point of this extensive meshwork. also apparent that even an exhaustive microscopical examination of the tissues in this area might fail to detect such isolated cancer cells. The evidence of the preëxistence of this invisible spread must, therefore, be based upon the localities in which postoperative recurrent growths manifest themselves.

In eight of the author's cases in which perineal excision had been performed for primary growths situated at a distance, varying from half an inch to five inches above the anal margin, recurrence took place in the perianal skin.

In eleven cases of recurrence after perineal operations, performed by other surgeons, the perianal skin was involved. In five cases in which the operation performed was resection of the diseased segment, with end-to-end anastomosis, the perianal skin was involved by the recurrent growth. In all of these five cases the primary growth must have been situated at least three inches above the anal margin, and possibly at a higher level.

All of these cases point very strongly to the fact that the perianal skin is very highly vulnerable to downward invisible spread, even when the primary growth is situated in the upper part of the rectum or in the terminal portion of the pelvic colon.

The lymphatic area in the zone of lateral spread embraces the levatores ani muscles, the retrorectal lymph nodes, the lymph nodes in relation with the branches of the internal iliac artery, the prostate gland, the

base of the bladder, and, in the female, the posterior wall of the vagina, the cervix uteri, and the base of the broad ligament with Poirier's gland. Situated between the upper surface of the levatores ani and the rectovesical fascia there is an extensive lymphatic plexus which freely communicates with the intramural lymph plexus. Consequently, in growths located in the ampulla of the rectum, direct permeation is especially liable to take place there.

Enlargement of the retrorectal lymph nodes is nearly always met with in carcinomatous ulcers of the ampulla of the rectum. This is often of an inflammatory nature owing to septic absorption, but nevertheless secondary deposits in these nodes are frequently met with.

The capsule of the prostate gland is sometimes the seat of visible spread in cases of cancer situated on the anterior wall of the ampulla of the rectum.

It is advisable, therefore, in all cases of a growth situated in this position to dissect off the capsule of the prostate gland as a matter of routine. Implication of the base of the bladder and of the lymph nodes situated among the branches of the internal iliac vessels is only seen in the more advanced cases, and although it may be impossible to detect the presence of such deposits before an operation, when they are encountered an early and speedy recurrence of the disease may be anticipated. Involvement of the posterior surface of the vagina may also occur early in growths situated in the terminal portion of the pelvic colon.

It will be seen, therefore, that somewhat wide and extensive visible spread of the disease among the tissues constituting the zone of lateral spread may occur in early cases. Such secondary deposits, in a great many cases, cannot be detected beforehand, and might be missed altogether during the performance of an operation carried out solely from the perineum.

The zone of upward spread is much the most important of the three, from the point of view of the extramural spread of cancer of the rectum. The structures contained therein are the peritoneum of the

floor of the pelvis; the pelvic mesocolon throughout its length; the paracolic lymph nodes; and the group of lymph nodes which are situated at the bifurcation of the left common iliac artery. In quite early instances of cancer of the ampulla of the rectum, and also of the terminal portion of the pelvic colon, invisible extramural spread occurs rapidly, and is distributed over a wide area. The tendency is for cancer of the rectum to spread upward in the pelvic peritoneum and the pelvic mesocolon, the lymphatic plexuses in which terminate in lymph vessels accompanying the inferior mesenteric vein as it lies in the parietal border of the pelvic mesocolon, on their way to the lymph nodes grouped at the bifurcation of the left common iliac artery. Consequently these tissues must be considered to be highly vulnerable to recurrence, and should in all cases be fully removed.

The presence of secondary deposit in either the pelvic peritoneum or in the pelvic mesocolon is evidence that the case is too far advanced for operation; and if the lymph nodes, situated at the bifurcation of the left common iliac artery, are the seat of metastases the case is quite hopeless, because invisible spread would have probably extended to a much higher level. Moreover, there is clinical evidence that peritoneal surfaces are especially prone to contact infection.

Miles believes that 95 per cent of cases are operable if the radical abdominoperineal operation is contemplated; but if perineal methods of excision are adopted, over 90 per cent will recur. He reports that of 58 patients who had recovered from perineal excisions performed by himself, 55 are known to have suffered from recurrence. This because of the fact that the tissues composing the zone of upward spread are beyond the reach of any operation carried out from the perineum.

The operation of resection of the diseased segment with end-to-end anastomosis, though ideal from a surgical technique point of view, and having perhaps its sphere of usefulness for teaching students manipulative skill when operating upon the cada-

ver, is a bad one, whether it be performed from the perineum for carcinoma of the terminal portion of the pelvic colon, or from the abdomen in cases of cancer situated at or about the middle of the sigmoid loop.

Of the seven operations he performed all recurred, even though the growths were in an exceptionally early stage of development. The abdominoanal operation is similarly condemned. Miles means by this term bringing down the colon and stitching it to the anal orifice. The objections to this method are that the greater part of the pelvic mesocolon must be left behind in order to maintain the blood-supply of the new rectum. If, however, the pelvic mesocolon is removed the pelvic colon will slough, and the operation would be worse than useless. Moreover, the levatores ani, the ischiorectal fat, the external sphincter muscle, and the perianal skin are all preserved in violation of the teachings of pathology in regard to their vulnerability to recurrence. A colostomy opening is necessary because it is essential that the pelvic mesocolon be completely removed, and therefore the whole of the pelvic colon must be removed also, with the exception of a small portion close to the descending colon which is utilized in the formation of the colostomy.

If the best results are to be obtained the operation must not be reserved for advanced cases only. It should be done for early cases; in fact, the earlier the better, because then we may hope to have circumvented the invisible spread of the disease. Should this operation, as has been suggested, be utilized only for advanced cases, the invisible spread will have, in most instances, advanced beyond the confines of the operative field, and recurrence will be an inevitable result.

As to his own statistics in this operation, Miles has performed it 42 times—in 22 men and in 20 women. Of these 42 cases, 17 died from the operation, giving an operation mortality of 40 per cent. Peritonitis, shock, and hypostatic congestion of the lungs accounted for more than half the deaths. Four were attributed to cardiac

failure. In 25 patients who survived the operation, four have suffered from recurrence. Ten have been alive and without recurrence for two years and upward.

#### JOINT INFECTIONS.

OGILVY (New York Medical Journal. Dec. 2, 1911) notes that joint infections must be distinctly differentiated and classed by themselves. To this he gives no consideration in his present paper. As to tuberculous infections, he observes that fully 90 per cent of the chronic inflammatory joints of children are tuberculous. x-ray is often diagnostic, except when the disease primarily infects the synovia and is confined to it. As to treatment, the tuberculous joint should be repeatedly aspirated, thereafter opened, irrigated, and closed without drainage. Erasion is the next operation indicated, carbolic acid being applied to the foci of disease. Excision should be used only exceptionally in children. In adults it is the best operative procedure, especially in long protracted cases. Massage and passive motion should be begun as early as possible.

# TECHNIQUE AND REMOTE RESULTS OF VASCULAR ANASTOMOSIS.

CARREL (Surgery, Gynecology and Obstetrics, March, 1912) states that to-day the method of vascular anastomosis can be considered as completely studied both from the standpoints of technique and experimental results. As to general rules, rigid asepsis is absolutely essential, hence suture should never be performed in infected It is probable that slight nonwounds. suppurative infection which does not prevent the union of tissue primarily may be sufficient to cause thrombosis. Traumatism may also cause thrombosis. If a forceps be used, it must take between its jaws nothing but the external sheath. temporary hemostasis is obtained by means of forceps or clamps, these forceps or clamps must be smooth-jawed and the pressure of the jaws carefully regulated.

The desiccation of the endothelium may also lead to the formation of a thrombus. During the operation the wall of the vessels must be humidified with Ringer's solution, or covered with vaselin. The presence of coagulated blood or fibrin ferment or of foreign tissues or tissue juices on the interior can determine the production of a thrombus. It is therefore necessary to resect or to remove the external sheath from the edges of the vessels; for if during the suture it gets between the edges of the vessels, or around the silk threads, it very quickly leads to a deposit of fibrin, and possibly to an obliterative thrombus. washing carefully the vessel with Ringer's solution and coating it and the surrounding parts of the operating field with vaselin, we can efficiently protect the endothelium against coagulating blood and juices of tissues. Vaselin prevents, also, the fingers of the operators and the threads from being soiled by fibrin ferment.

As perforating stitches are always used, the endothelial layer is necessarily wounded by the needle. These wounds are rendered as harmless as possible by the use of very fine and sharp, round needles. Extremely small wounds are made. The threads are sterilized in vaselin and kept heavily coated with it during the suture. Vaselin is rubbed off in the holes, covers the silk threads, and prevents the wounded tissue and the foreign material from coming into actual contact with the blood.

Stenosis is very liable to occur at the point of anastomosis. Therefore the suture must be performed while the wall is under tension. The tension can be easily obtained by traction on retaining stitches properly located. Great care is taken to obtain a smooth union and approximation of the internal coats. When these general rules are observed, the operation can be safely performed.

The instruments employed are described and pictured, as is the method of hemostasis and suture.

As to the results, Carrel states that a great many anastomoses have been performed with this method. If the technique here described is followed, no complications occur. The results are practically always Therefore it has permitted the solution, from a surgical standpoint, of important problems, such as transplantation of venous segments to arteries, homoplastic and heteroplastic transplantations of blood-vessels, transplantation of vessels in latent life, of devitalized vessels, of pieces of veins, peritoneum and rubber on arteries, replantation and transplantation of spleen. thyroid gland, kidneys, limbs, etc. Many animals were kept alive for a long time; therefore the anatomical and clinical results of the anastomoses are completely known.

Immediately after the operation the endothelial coats of the vessels appear as closely approximated and the stitches are seen in the lumen of the vessel. After eight days the appearance is slightly modified; the line of union is less apparent. threads are uncovered by fibrin. The photograph of an arteriovenous anastomosis taken fifteen days after the operation shows the appearance of the scar when the stitches are very regularly disposed. In the arterial anastomosis the stitches disappear progressively and the scar becomes very small. Sometimes it is slightly depressed. No stenosis was ever observed. After six months the stitches have completely disappeared on an arterial suture, while on the venous anastomosis of a replanted kidney the threads could be seen ten months after the operation. On arteriovenous anastomosis, fifteen and twenty months after the operation, the location of the anastomosis can be determined on account of the difference of caliber; but it is perfectly smooth and there is no dilatation or stenosis at its level. After the extirpation and replantation of the spleen with circular suture of the splenic vessels, the caliber of the artery and of the vein remains entirely normal after twenty-two months. Several other animals have lived, or are still living, two years, two years and a half, three years, and four years after having undergone several kinds of vascular anastomosis. results are uniformly excellent.

The study of the sections of the anastomoses shows that the union of the ends of the vessels is always very accurate, and can even take place without scar. But such a perfect result is exceptional. In no case was dilatation or stenosis at the level of the line of sutures observed. The technique, therefore, brings about an almost perfect reconstruction of the vessel. It explains the constancy of its clinical results.

The technique has been used for several years on human beings. Crile employed it at the beginning of his method of blood

transfusion. Many other American and European surgeons performed anastomoses of large vessels. Even the aorta of a child was successfully anastomosed by Braun. The blood-vessel operations are easier on human beings than on dogs, and it seems that the results are as satisfactory.

It can be concluded that this simple method of anastomosing blood-vessels gives results that remain excellent after a long time, and that it can be used safely on human beings, provided the rules of the technique be strictly followed.

## REVIEWS.

A STUDY OF MALARIA AND BERIBERI. By S. M. Varis, M.D., C.M. The Pioneer Press, Allahabad, 1912.

This volume, which was gotten out as a contribution on the part of its author to the general rejoicing at the time of the visit of the present English King and Queen to India, points out the almost universal prevalence of malaria in that part of the world and the great frequency of beriberi. As an "apology" for his contribution the author states that most of the books upon this subject are not within the reach of his countrymen, and that he has had extraordinary opportunities for studying these diseases in places where they are constantly present in malignant form. As he has recently been Plague Medical Officer, he is naturally particularly interested in all forms of tropical diseases. gether he devotes 20 chapters to the subject of malarial diseases, thereby covering 385 of the 448 pages in the volume. In Part II there are six chapters, with references and bibliography, on beriberi. The first portion of the volume deals with the history of malaria and with the use of cinchona bark in its control. Then follow chapters upon the geographical distribution of the disease, the parasitology from the etiological standpoint, a description of the malarial parasite in its various forms, and remarks

upon the life cycle of the parasite and mosquito. Other chapters deal with the pathology of acute malarial diseases and malarial cachexia, with the variations in the course of the disease and with its complications and sequelæ. The closing chapters in the part dealing with malaria adequately discuss the subject of treatment. One great advantage of the book is that it is written by an author who has seen much of the disease. Although we like to be optimistic as to the beneficial effects of treatment, we believe that in many instances he thinks remedies can accomplish the impossible, and, like many East Indian writers, he has no hesitation in mentioning proprietary preparations which are no better than those which are official in the British and United States Pharmacopæias. The application of liquor epispasticus over an enlarged spleen due to chronic malarial infection is, we think, open to criticism, the more so as the author himself points out that a permanent change consists in a form of fibrosis.

A fairly exhaustive consideration of the various views as to the etiology of beriberi is presented. It is interesting to note in this connection that for the cardiac failure which occurs in some cases of beriberi the author seems inclined to indorse the use of adrenalin.

THE HOME-NURSE'S HANDBOOK OF PRACTICAL NURSING. By Charlotte A. Aikens. Illustrated. The W. B. Saunders Co., Philadelphia, 1912. Price \$1.50.

Whatever we may think of the value of books prepared especially for nurses who are undergoing a course of instruction as pupils in a large hospital with a properly maintained nurses' training school, we cannot extend approval to books which are designed for home-nursing classes in Young Women's Christian Associations, in schools for girls, and as a working textbook for mothers and trained attendants. If it be true that no physician is well trained until he has obtained hospital experience in addition to his undergraduate studies, it is even more true that no nurse is well trained until she has been subjected to the discipline of a hospital and until she has been taught not only by precept but by observation and training exactly how to use her hands as well as her brains in caring for the sick. In other words, any book which is designed to help the nurse along a short and imperfect road is scarcely to be commended in its object, even if the text is of such a nature as to be beyond criticism. Some of the illustrations in the form of plates are entirely unnecessary, as, for example, those which show a tray containing a breakfast, a luncheon, and a supper. While it may be important for the nurse to study the patient's convenience, it is hardly worth while to introduce a plate in which the legend informs us that if the teapot on the depicted tray had been put in the upper right-hand corner instead of the upper left-hand corner, the patient's convenience would have been promoted. Equally unnecessary is the plate showing a bowl of soup, six pieces of cake, three pieces of celery and some olives, and prunes or walnuts (one can't tell which) on a fourth dish, or still another plate labeled "For a Patient on a Light Diet," which is so indefinite that none of the viands can be distinguished, and one of them may be the cross-section of a Dutch cheese, of a grapefruit, or of a cantaloupe. Toward the close of the book, amongst a number of

excellent recipes, we find a plate with a dish of nuts and another of devilled eggs, but no one can tell of what kind the nuts are, and there is nothing to show that the eggs have been "devilled" except that they seem to be resting in some leaves. This interesting plate is followed by one entitled "Calf's-foot Jelly and Other Things." These, however, are the worst features of the book. The best features are probably the series of questions which close each chapter, whereby the main points are emphasized and the nurse can give herself a quiz.

THE INFLUENCE OF CAFFEINE ON MENTAL AND MOTOR EFFICIENCY. By H. L. Hollingworth, Ph.D. The Science Press, New York.

This volume is a reprint from the Archives of Psychology for April, 1912, and is a contribution from the Columbia University in Philosophy and Psychology. As there are no less than 166 pages in the volume it can easily be understood that the matter is considered exhaustively, and careful descriptions are given of all the experiments which were carried out by Dr. Hollingworth in a most exhaustive research. The results of these experiments have already been reported by him in a comparatively brief summarization of his work which he published in the THERA-PEUTIC GAZETTE during the latter part of January, 1912. It will be recalled that Dr. Hollingworth has practically proved beyond all question that caffeine increases the ability to work within certain limits, if adequate food and rest is provided, without in any way drawing upon the reserve energies of the body, this increased ability being due to an increased ease of work whereby the functions are performed more readily.

There are no less than fifteen chapters detailing the results and methods employed. In the earlier ones a careful description is given of the technique which he used, and then come chapters upon the various tests employed when the patient took caffeine or was free from its influence. Up to the present time there has been no research upon the influence of caffeine upon mental

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and muscular effort so thorough and complete as this one, which must remain for many years, if not forever, as a classic contribution to a subject which is interesting to the entire human race. Although the experiments covered forty days the author is frank enough to admit that they cannot be considered as equivalent to the results which might ensue from the continuous use of caffeine over a period oi months and years; but he also points out that many of the disagreeable effects which ensue when coffee and tea are employed are in reality due to non-caffeine ingredients and not to the caffeine itself. As he well says, the most interesting result of his investigation is the proof that there is a complete absence of any trace of secondary depression of any sort or of secondary reaction after the stimulation undoubtedly induced.

INFANT FEEDING. By Clifford G. Gruele, A.M., M.D. The W. B. Saunders Co., Philadelphia, 1912. Price \$3.00.

So many books upon this subject are now presented for the patronage of the profession and the laity, and so many are excellent, that it is difficult to make a choice for oneself or for one's patients. This volume, including its index, covers about 300 pages, and therefore there is space for a fairly exhaustive consideration of the subject in hand. Opening chapters deal with the processes of nutrition and the digestive tract, then with the breast-feeding of infants, and this is followed by eight chapters upon artificial feeding. fourth part of the book deals with special diets in various disorders and diseases of infancy. In this part an unusual classification is made in that there is a chapter devoted to the so-called "exudative diathesis," which is described as a congenital anomaly of the organism which usually affects all members of a family and is characterized by a distinct predisposition to eczematous conditions of the skin and infection of the respiratory tract. So, too, there is another chapter upon the "spasmophilic diathesis," which is described as a condition characterized by increased irritability and a tendency to a spasm-like contraction of one or more groups of muscles. It is encouraging to know that when a child falls into one of these spasms one should never despair until the heart sounds can no longer be heard. The book contains a large amount of valuable information. It is worthy of being added to the library of those who are particularly interested in this branch of medicine, but it will not in our opinion supplant other books upon this subject which are now popular.

A TEXT-BOOK OF ALKALOIDAL THERAPEUTICS. By William F. Waugh, M.D., and W. C. Abbott, M.D. Third Edition, Revised and Enlarged. The Abbott Press, Chicago, 1911.

As is evident from its title, the authors of this book have prepared it with the object of advancing the popularity of active principles of drugs rather than the so-called galenical preparations. They not only advance their own views, but they quote copiously from the opinions of others who are recognized as possessing more or less authority in the field of therapeutics. The text distinctly combats the very prevalent nihilism which is found amongst certain practitioners to-day, and one cannot help feeling that the great optimism, as to the effects which it is possible to produce by drugs, will not in the end, when the practitioner meets with unavoidable disappointment, make him doubtful rather than en-The authorities do not limit. thusiastic. themselves to the consideration of vegetable substances which possess active principles, but discuss as well drugs which are obtained in the mineral kingdom. A condensed therapeutic index precedes the list of authors quoted and affords at the same time an index to the contents of the volume in general.

MEDICAL POCKET FORMULARY. By E. Quin Thornton, M.D. Lea & Febiger, Philadelphia, 1912. Tenth Edition Revised. Price \$1.50.

The crowded course of the medical curriculum makes it almost impossible for the medical student to have sufficient training in prescription writing and the combination

of drugs before he graduates. This is much to be regretted, and results in the employment of ready-made formulas to an extent which is perhaps undesirable. On the other hand, there can be no doubt that a number of drugs brought together in a proper manner often possess a power for good which they would not have individually, and perhaps more than the total of their single efforts would amount to if they were not added together. In other words, the combination materially increases the efficiency of each ingredient. Furthermore, it is essential in many instances that the medicine shall be put in an attractive form. Dr. Thornton has succeeded in producing a very efficient and complete formulary is proved by the fact that ten editions have appeared in a comparatively few years.

A COMPOUND OF HUMAN PHYSIOLOGY FOR THE USE OF MEDICAL STUDENTS. By Albert P. Brubaker, A.M., M.D. Thirteenth Edition, Illustrated. P. Blakiston's Son & Co., Philadelphia, 1912. Price \$1.25.

For more than thirty years Dr. Brubaker's little book has been familiar to the medical students of this country, being one of the first so-called quiz-compends which Actively engaged in teaching appeared. this department of medicine to undergraduates, and being constantly at work in revising the editions of a larger book, he is kept thoroughly abreast of physiological advances, and in the brief space of about 250 pages covers this large field surprisingly well. It goes without saying that it is quite impossible for any student to use this book as his sole source of physiological learning, but as a means of brushing up for his quizzes in examination it can be commended because of its concise character and accuracy.

WHEN A BOY BECOMES A MAN. A Little Book for Boys. By H. Bisseker, M.A., with a Foreword by Edward Bok. The Fleming H. Revell Co., New York, 1912. Price 25 cents.

This little book belongs to a series which has been given the name of the "Edward Bok Books," not because Edward Bok has written them, but because he seems to be

responsible for their appearance in this form. The other books of the series consist in little volumes, one of which is intended for parents, entitled "How Shall I Tell My Child?" and in another for young men written by Dr. Hall entitled "Instead of Wild Oats." In the brief space of forty pages, five chapters deal with "what goes on inside of you," "how a boy can injure his future," "the greatest danger of all," "where Nature takes its course to the boy who has yielded." The best advice in the book is that a boy should always remember that his father is his best confidant.

How Shall I Tell My Child? By Mrs. Woodallen Chapman, with a Foreword by Edward Bok. The Fleming H. Revell Co., New York, 1912. Price 25 cents.

We have just referred to this little book in the paragraph above. It seems to us to be the better of the two. The first chapter asks and attempts to answer the question, "What Should I Tell My Child?" The second, "At What Age Shall I Tell My Child?" The third, "How to Tell a Child;" the fourth, "When a Child has Already Heard;" fifth, "When a Wrong Habit has been Formed;" and the sixth, "At the Adolescent Period." This book deals as much with a mother's attitude to her son as with her attitude to the daughter.

INSTEAD OF WILD OATS. By Winfield Scott Hall, with a Foreword by Edward Bok. The Fleming H. Revell Co., New York, 1912. Price 25 cents.

In this one of the series to which we have already referred Dr. Hall deals with matters in a plainer fashion than the authors of the other two volumes. This is obviously necessary in view of the fact that it is written not for the parent but for the use of the boy who has practically reached manhood. The advice which is given in it is good, and the dangers of wild oats are clearly pointed out. That these three volumes are capable of materially arresting the great wrong of the ages is, of course, not to be thought of, but they are sane and simple presentations of facts which will help in the cause.

A COMPENDIUM OF DISEASES OF THE SKIN. With a Therapeutic Formulary. By L. Duncan Bulkley, M.D. Fifth Revised Edition. Paul B. Hoeber, New York, 1912. Price \$2.00.

Dr. Bulkley is known as a prolific writer and constant lecturer upon diseases of the skin. We do not see that this volume possesses any advantages which cannot be found in other equally condensed or more complete treatises on dermatology. There are no illustrations, but toward the close of the book there is a formulary giving the composition for medicated baths and the various forms of local applications and internal medicines which are commonly used by dermatologists.

SURGERY OF DEFORMITIES OF THE FACE, INCLUDING CLEFT PALATE. By John B. Roberts, A.M., M.D. Illustrated. William Wood & Company, New York, 1912.

This excellent brochure of 259 pages is designed to be helpful to the clinical surgeon, into whose hands inevitably fall a certain number of deformities of the face and the head. After preliminary chapters devoted to the Development of Plastic Surgery, a Survey of the Anatomy of the Face, the Characteristics of Surgery of the Face, the Principles of Plastic Surgery of the Face, Gunpowder and Local Discolorations and Tattooing, are taken up Fistulas, Fissures, Encephalocele, Atrophy and Hypertrophy; Disfiguring Skin Diseases Requiring Surgical Treatment; De-

formities of the Mouth and Lips, Harelip and Other Facial Clefts; Cleft Palate, this section being covered briefly but with unusual clarity considering the space occupied. Then follow chapters on Cheiloplastic Operations not Connected with Harelip and Cleft Palate; Deformities of the External Ear; Deformities of the Nose; Rhinoplasty and Deformities of the Eyelids and Eyeball.

A MANUAL OF SURGICAL TREATMENT. By Sir W. Watson Cheyne, Bart., C.B., D.Sc., LL.D., F.R.C.S., F.R.S., and F. F. Burghard, M.S. (Lond.), F.R.C.S. New Edition, Revised. Assisted by T. P. Legg, M.S., F.R.C.S., and Arthur Edmunds, M.S. (Lond.), F.R.C.S. In Five Volumes. Volume II. Lea & Febiger, Philadelphia and New York, 1912.

This second volume deals with the Surgical Affections of the Skin and Subcutaneous Tissues, the Nails, the Lymphatic Vessels, the Glands, the Bursæ, the Muscles, the Tendon Sheaths, the Nerves, the Blood-vessels, and the Bones and Amputations. It represents thorough revision and much rewriting of the original edition, incident to the many changes which have occurred in the field of surgical treatment. There is evidence throughout of careful study of modern literature and a wise selection of methods which have stood the test of clinical experience. The illustrations are numerous and adequate. book is one to which the hospital surgeon can turn with full confidence of help.

## CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The passage of the Workmen's Compensation Act some years ago gave rise to a large number of cases of medicolegal interest in the courts of law. These actions were mostly claims for compensation for injuries received in the course of employment. But a case recently decided in the courts has opened up entirely fresh ground. A young clerk claimed damages for alleged negligence on the part of his late

employers, stating that owing to the insanitary condition of the office in which he worked for five years he contracted phthisis and had become an incurable consumptive. Dr. Leonard Hill, the physiologist, was called in to make an inspection of the premises in question, and his report was favorable, as there was no undue heat or moisture in the air and there were over 160 cubic feet of space to each person. Various clerks gave evidence as to their repeated illnesses during the time they were employed in the office, though one witness testified that he had spent twentythree years in the said office without a
single serious illness. After the jury had
been to view the premises in question they
gave it as their opinion that the conditions
in the office were injurious to the health
of the persons employed in it, including
the plaintiff, but that the defendants were
not cognizant of these facts. Judgment
was accordingly entered for the defendants, but it is more than probable that a
test case on the same lines will be taken
before the House of Lords for final decision.

The proper feeding of children at school has just been discussed at a conference of the National Food Reform Association, and representatives from some of our bestknown public schools gave their opinions on this important subject. The head master of Rugby made one statement that we feel sure will appeal strongly to the schoolboys under his care. He said that "while adults should rise from table hungry, children should reach a sense of repletion before rising." This delicately worded statement by a schoolmaster rouses in us a longing to be back again in our school days under the care of such a master; but alas, things were different in our day! Other speakers made attacks on the delights of the tuckshop, but there is no doubt that even in high-class schools the monotony of the fare provided leads boys to spend their pocket money on unhealthy delicacies. One suggestion was made which will, we hope, receive wide attention, viz., the importance of so arranging the meals that the mouth will be in a hygienic state on finishing the meal, and examples of cleansing foods suitable for the end of a meal were given.

The cinematograph is evidently destined to become an educational force in this country, especially in the study of hygiene. The Incorporated Institute of Hygiene has inaugurated a series of "living-picture" demonstrations as an aid to sanitary science. The president pointed out how much useful work could be done in illustrating

matters connected with preventive medicine, and common dangers to health such as the fly pest, stagnant water, etc. A very striking and startling picture was shown illustrating the dangers of infection carried by the common house-fly. First the flies were shown actually laying their eggs in a piece of putrid meat. Then all the stages in the development of the maggot were shown until the full-grown insect emerged. full-grown flies were seen one moment sucking up the putrid exudations from a foul dead fish, the next moment settling on a basin of sugar on the tea table. To illustrate the methods by which tuberculosis may be transmitted from the aged to the young, a most disturbing picture was given showing the flies crawling in a well-used spittoon and apparently obtaining great satisfaction from its contents. Then the picture changed and the flies were seen walking over and licking the teat of a baby's feeding bottle. Perhaps the most gruesome picture was the final one, which showed the infant himself, chubby and healthy looking, but drawing into his system with every pull hundreds of microbes responsible for the most terrible of diseases. The demonstrations were so striking that at the end one could only wonder that any of us had survived the numerous dangers of our childhood and lived to tell the tale.

In the controversy which is still raging around the National Insurance Bill the profession have just scored a distinct victory. A motion was proposed in the House of Commons by a Unionist member which practically amounted to a vote of censure on the government for not having secured the cooperation of the medical profession in the working of the Insurance Act, as without such cooperation the act must fail efficiently to provide medical benefit. the government men had not turned up in full force, ministers were faced with the possibility of a defeat in the division lobby, and rather than put the matter to the test they were obliged to accept the motion as it stood. Since then a formal notice has been issued to the medical profession by the

Insurance Commissioners inviting any information as to the conditions of practice that might be of service in drawing up the regulations for the administration of medical benefit. Although the lateness of the invitation has received considerable criticism, it has been well received and there will be no lack of response both from private practitioners and medical bodies. The British Medical Association will probably take the opportunity of placing before the Commission the information it has collected about the conditions of contract practice in the country, upon which information the demands of the doctors have been based. Whether this invitation for further information is an indication that the Chancellor intends to accede to the demands of the profession is at present a subject for keen discussion, but meanwhile the collection of pledges to give up all contracts for club practice, if necessary, goes steadily on.

A select committee has been appointed by the Home Secretary to investigate the question of the sale of patent medicines and their advertisement. The appointment of this committee is the result of an agitation which has long been carried on against the sale of proprietary medicines and foods, and many questions have been raised in Parliament on the subject. It has been urged that the composition of every advertised remedy should be plainly indicated on the label of every bottle or packet as a protection for the public. On the other hand, the proprietors of patent medicines contend that this protection would be worthless and that the home manufacture of proprietary articles from formulæ might result in worse evils, besides opening up a vast field for the substitution of "just as good" articles. Besides this the disclosure of its formula renders the trade-mark rights of any article practically worthless, and it is claimed that there has not been a single instance where a manufacturer has disclosed his formula that he has been able to retain his proprietary rights in his article. Proprietary articles when made by reputable firms have of late come so markedly

into general favor on account of their handiness and uniform quality that legislation on the subject should only be passed after the most careful consideration of the matter from every aspect.

We regret to have to record the death of Sir Frederick Wallis, which occurred at the early age of fifty-three. Perhaps the work by which he will be best known is the part he took in the promotion of the Union Jack Club, which was founded as a national memorial to the soldiers, sailors, and marines who died in the South African war.

#### PARIS LETTER.

BY M. A. C. TUCKER, M.D.

With a view of safeguarding the professional interests of the corporation the "Syndicat Général des Oculistes Français" have taken energetic steps and have loudly protested before the administrative authorities against a well-to-do gentleman who is reproached with having obtained gratis pro Deo the performance of a cataractal operation within a ward of one of the Paris hospitals.

In the course of the first half year of 1911 the gentleman in question, said to be in an easy position of life, had himself admitted into the ophthalmological service of the hospital. Thus not only did he deprive the medical corps of the legitimate fees, but at the same time he unduly possessed himself of the room, bed, and assistance of a necessitous patient.

The fact having been brought to the knowledge of the aforesaid syndicate, the latter lost no time in addressing a strong protest to the charitable institution, and after a careful inquiry, in the course of which the prosperous station of the delinquent was fully established and demonstrated, the trustees of the hospital were empowered by the Home Secretary of the Republic to sue administratively the unscrupulous person for one thousand francs damages. In order to avoid the prosecution he was threatened with, the incrimi-

nated party submitted quietly and paid the amount claimed. Moreover, recognizing the wrong done to the profession, the hospital authorities were ordered to pay over half of the sum to the General Syndicate of French Oculists. This is important, inasmuch as it creates a most interesting precedent which should, in my opinion, be followed everywhere, for it concerns the most vital interests of the medical profession.

Of all questions of actuality the reform of the "Codex Medicamentarius Gallicus" is attracting and retaining general attention The last edition of the Code was published four years ago, the previous issue dating from 1881, a supplement to which appeared in 1905. The edition of 1908 was the work of a special commission instituted in 1897 by the Minister of Public Instruction, and after a laborious incubation of eleven years the said commission gave birth to a very imperfect creature which was far from answering general hopes and expectations, in spite of all the attention and anxious cares of its initiators. But if the new-born child presented great qualities and fine appearance it concealed also numerous deformities.

By a decree, dated April 16, 1910, of the Secretary of State for Public Education, a special and permanent commission was formed in order to prepare the future elements of a French pharmacopæia, and it sounds somewhat paradoxical to hear that out of the twenty-three members of such commission only three doctors in medicine are permitted to take part in its work. Moreover, these three medical lights are Professors Landouzy, Chassevant, and Mosny, assuredly most eminent men and distinguished members of the University and of the Academy of Medicine, but too much absorbed by their multifarious duties to be constantly posted on the daily innovations both in pharmacology and therapeutics. At all events, the adjunction to them of a few practical men ordering and applying remedies all around and every day would certainly and greatly help the deep

theoretical science of the former with their material experience and skill.

By a recent decision published in the Journal Official the post of chief of the practical anatomical studies has been reestablished at the Paris Faculty. Curiously enough, this event coincides with a vote of the town council of Sceaux, a pretty little town near Paris, demanding that "patients dying in hospitals should have a right to have a grave, and that their bodies should not be disposed of without their express ante-mortem authority."

It must be mentioned that in such cases, when the bodies are not claimed by relatives, they are generally sent to the dissecting amphitheatre of the nearest surgical or medical university for dissection by students. There is no doubt that with our present notions of the respect due to the dead such a final fate seems rather shocking to many a delicate mind. But I am afraid that there is no remedy for the evil, if evil it be, and that such pious manifestations are fatally bound to remain purely platonic. Dissection of a corpse may be in itself a regrettable act, but nobody at the present time could seriously dispute its imperative necessity for the advancement of science. Without dissection, no anatomy; and without anatomy, no possibility of medical or surgical studies. Prohibiting dissection would bring us back to ancient times, when the opening of any human body was vigorously forbidden, and when anatomists were reduced to work upon animal carcases, as was the case of the celebrated Galen, who dissected apes seemingly with the idea that their structure approached that of the human species.

In April, 1572, the Paris Faculty of Medicine obtained from parliament "That no one will be allowed to anatomise unless the operation is performed under the supervision of a doctor in medicine, and that no corpse will be delivered to anyone, either by the criminal judge, by the executioner, or by the masters of hospitals, without the signed authority under seal of the dean of the Paris Faculty of Medicine."

In 1633 a surgeon was fined sixty pounds for infringing the order, and fifty years later the surgeon of the royal Duke of Orleans, having been convicted of unlawfully buying several corpses from a gravedigger's son and operating upon them, was banished for life and to have all his properties confiscated, whilst his accomplice, besides being ordered to pay a fine of thirty pounds, was condemned to be publicly flogged at the customary places and thoroughfares.

## NOTES AND QUERIES.

#### PROGNOSIS.

Prognosis is so closely connected with treatment that a journal devoted to therapeutics may well quote an interesting article in the British Medical Journal of February 10, 1912, by Gardner. He reminds us that the diagnosis of disease, its treatment, its pathology, its etiology, are each and all matters of more or less difficulty. The prognosis of disease is beset with pitfalls; these pitfalls are many and frequent, not merely for the tyro in medicine but even for the most experienced. Prognosis means "knowing before," and though here and there no one better than a medical man can "know before" what is likely to ensue in a given case, how often it happens that the event turns out somewhat differently from what even the most experienced among us has been led to expect!

Gardner has been led to this subject as the basis for a few remarks owing to the number of cases he has encountered in which patients have told him that many years ago they were told they had some fearsome or fearful disease; that Dr. Soand-so said they had only days or a few weeks or a few months, as the case might be, to live, and that, to their astonishment, not only have they lived, but the fearful and fearsome disease from which they were supposed to be suffering and which was to prove so fatal has entirely disappeared, according to later authorities consulted: and here and there it has so happened—and Gardner confesses to a certain feeling of exhilaration whenever this fact is superadded—the condemning medical

man has died first. He asserts he feels he ought to suppress this exhilaration, but has to confess that in almost every case in which this sad fact has been recorded by the condemned patient, he has so far failed. Not that he has not made mistakes himself, he states, as the sequel shows. But when he considers the number of lives he has met with, broken-down nervously, apprehensive neurotics; coddled bronchitics; gluttonous dyspeptics; females with "heart disease" suffering from flatulence; patients with pseudoangina in Bath chairs; crossgrained and irritable old ladies taking opium pills, and making every one about them miserable by fads and fancies and vapors-then he asks himself who is responsible for so much of this misery and distress, and he too often finds it is a member of his own profession, who, in some unguarded moment, started a pebble of innocent prognosis which, rolling on during the years, has become a regular avalanche of chronic invalidism and avoidable self-torture. Beware the unguarded word! Beware the unguarded hesitation! Beware even the unconscious sigh! eminent consultant once told Gardner that a patient made to him this interesting con-It was fortunately after many years of successful attendance, when the lung mischief for which he was called in had quite healed, and the patient knew her doctor well enough to talk to him in this wise: "Early in my illness, when you used to auscult my lungs, you had, perhaps, what was only a trick or habit of listening to my breathing, and then giving a little sigh. Every time you did this I said to myself, 'Another bit of my lungs gone.'" Gardner adds, but says he need hardly do so, that his medical friend was quite unconscious of his sighing propensities.

But this brings him to the point he wishes particularly to emphasize—that we medical men hold here an enormous power potent for good or ill to our patients. Sometimes it means all. Is it serious? Is it dangerous? Is it malignant? Is it a growth? Is it heart disease? Is it this? Is it that? Let no one of us think it is a matter of indifference how we answer. Of course we must give an honest opinion, but how that honest opinion is given matters a very great deal.

It is not the intention of Gardner to debate the old question as to how far we are to communicate dire and dread facts to our patients; whether in all cases we are to tell the brutal truth brutally or politely. Whether the patient with heart disease is to be shielded from knowing the truth, the whole truth, and nothing but the truth. Whether the inoperable malignant growth is to be unmasked in all its hateful aspect to the trembling patient hanging on our lips for the fateful decision. These questions have been debated before and generally receive the tactful and courteous consideration which still endures among us. and which distinguishes our profession even above all others, not excepting the clerical.

He wants rather to emphasize this part of his subject, that in doubtful cases, where we cannot be quite sure, where our "knowing before" must, if we are honest to ourselves, be a very uncertain knowledge, let us hesitate before we speak in didactic phrase to either the patient or anxious friends, of how long the sufferer has to live, and how short the time before the "abhorred shears" will snap the life-thread of those dependent upon us for an opinion as to prognosis in an admittedly problematical situation.

We may be wrong in our deductions. Gardner recalls two cases from his own experience to show this. Twenty-seven

years ago he was asked to see, for an absent colleague, a bad case of hemoptysis, fibroid lungs, extensive excavation, emaciation, fever, and the usual accompaniments of fairly advanced pulmonary disease; frequent and severe attacks of hemorrhage followed. Prognosis! Well, most of us would have failed to guess what has hap-That patient, thanks to indomitable pluck both on his own part and that of a devoted wife, is still the honored head of one of the principal firms in Bournemouth, going to his office daily, and getting through an amount of work which puts to shame many a younger and a stronger man. How easy to have taken a pessimistic view of such a case twenty-seven years ago, to measure out his days, and to quote a very long figure in sporting odds against the chances of such a one. Had he been told he had no chance of recovery, had he had explained to him the pathology of his case, had he been other than he is in temperament, pluck, and that "quietness and confidence" which go so far to help such a sufferer, he would hardly be alive to-day. Gardner believes the deduction from the usual experience of such cases would have buried him years ago.

Yet another case. Four years ago a severe case of rheumatoid arthritis in an old lady of nearly eighty years came under Gardner's care. The severe pain which she suffered on the slightest movement was excruciating, and this pain persisted in spite of sedatives, spas, and external applications, giving rise to the suspicion that such acute agony could only be due to ulceration inside the hip-joint, to which most of the pain was referred. Heart complications set in three years ago at eighty years of The myocardium became very degenerated; anasarca and ascites, and at last a general edema, reaching even to the face, seemed to usher in the final scene. Prognosis, three years ago-a week or a month would seem to be the proper period to give to such a case. Yet that patient is still living, still dropsical, still with heart attacks of such a nature that she becomes cyanotic

for hours, but the pain of the rheumatoid condition has long since departed, and yet blistering her spine has not been the treatment employed.

Such cases, he thinks, should teach us to be more chary of prophesying when we do not know. Probably every medical man could give instances from his experience of such cases. The lesson to be learned is obvious. Even from the lowest motive—a desire to show our knowledge—it is wise to hesitate before limiting the period of existence possible in even some of the worst cases with which we may be confronted. Nor does the individual who attempts to be in a measure cheerful escape from pitfalls of his own making, as the following instance shows:

An eminent practitioner of this town was attending an old woman, aged eighty. To cheer her up, and impart some of that optimistic spirit for which, as well as other virtues, he is rightly famous, he told her he could see no reason why she should not live to be ninety. Contrary to his expectations and to those of her friends, a more settled gloom and melancholy possessed her, even after this would-be cheering intelligence. The secret came out later when, asked if she was not glad her doctor said she might live to be ninety, she pathetically answered, "No, he limited me!" So here is another possible rock of offence-do not limit your prognosis to a term of years, or some misunderstanding may arise even then.

But there is still another aspect of this subject to which Gardner draws attention—the therapeutic effect of a hopeful prognosis. He speaks from a personal experience both on his own corpus vile, as he terms it, and the results on others. If it is at all possible, be optimistic. One little knows the suggestive value of a hopeful prognosis. In the course of a fairly long experience Gardner asserts he could quote case after case in which a hopeful prognosis has done more than all the drugs, vaccines, serums, inhalations, et hoc genus omne in curing a patient. Hope is that

potent elixir of life, as opposed to hopelessness, that dreary quenching of the spark of life. Never mind the failures; we have all to fail one day. Death, against whom we wage an incessant war, and whom we so often drive away from the field baffled and defeated for a time, has yet this revenge: some day he will return to conquer. Yet, while we honestly can, let us add to our therapeutic armory the suggestion of hope. If we cannot give hope of cure, let us give hope of relief; if we cannot give relief, let us give hope of partial relief; if we cannot give hope of partial relief, let us have some philosophy to offer to our wounded and sorely stricken patients, that even then we may administer some medicine to the mind.

Gardner then refers to a letter written to the British Medical Journal some years ago reflecting somewhat scathingly on the optimism of a well-known London consultant whose name at that time was in almost every one's mouth, professional and layman alike. A patient who complained of pain in the chest and had consulted many men, but could get no relief, at last consulted this famous consultant, and was told nothing could be found, not even with x-rays. He was sent away with a cheerful prognosis. Soon after x-rays revealed a mediastinal tumor, from which ultimately the patient died. How wrong, in the opinion of the writer of the letter, was the prognosis of the optimistic consultant! With this Gardner differs. For the one case that was cheered up wrongfully, he, from his own knowledge, could quote a dozen-and he has no doubt the list could be swollen to a hundred even by others which this cheery consultant has blessed by his optimism and put on the road to recovery by a hopeful prognosis, and personally he would rather have the opprobrium of one case where in good faith he had given too hopeful a prognosis than bear the guilty knowledge of having condemned an innocent sufferer to added pains more hard to bear, more difficult to sustain, because mental as well as physical, by a dreary prognosis, proved wrong by the after-history of the case, and given on an assumed knowledge which by the light of experience may be falsified again and again.

He believes the younger members of the profession are the principal offenders in this respect. They come fresh from hospital with all the latest learning at their finger-tips; they have seen so much that we poor provincial country "joskins" cannot (as they think) have seen, and are so up to date and familiar with the grave cases and serious puzzles of the London hospitals, that there is no wonder they are somewhat biased in favor of the greater surgery. When, then, a child has overeaten at a party and has a flushed face, is slightly delirious, has a high temperature, is constipated, sick, and presents a doubtful tache cérébrale, it is not always necessary to get in a couple of nurses, apply Leiter's tubes to the head, make a lumbar puncture, and talk to the anxious parents of tuberculous meningitis and other grave diseases. A dose of calomel has been known to make all the other fuss superfluous. A story told of Sir John Erichsen is much to the point here. A woman had sustained an injury to her elbow and had seen several surgeons of note, who failed to give her relief or even give a satisfactory account of the nature of the injury. She was advised to consult Erichsen (then at the zenith of his fame) for a positive diagnosis. After careful examination he counseled the patient thus: "You say, Madame, that you have come to me for a positive opinion about

your elbow, and I frankly admit that I cannot give you that opinion; but if you must have a positive opinion, there is the address of my young house-surgeon—he is just qualified—he will give you one."

No: we are none of us infallible, not even the youngest of us, and this fact should make us all, young and old alike, pause before we destroy hope, give even a suggestion of hopelessness, or light-heartedly give expression to opinions and prognosis which may quench forever the light from our patients' lives, and then if, after all, we should prove to be wrong, let us know that never-and the more if we are ordinarily skilful and have a reputation for medical or surgical skill-never shall we or our more careful colleagues be able entirely to remove the impression which our suggestion has made. Tell a patient, perhaps, a growth is malignant, or say lightly "it may be cancerous," or say flippantly, "Oh, your heart is bad," or, "I think your lung is slightly touched," you may not have meant to imply the serious thing your patient thinks you implied, but no matter what assurance he or she may receive from better men than you, and even two, three, or more better men than you, the fear, the haunting suspicion, will forever be in that patient's mind, "It may be true;" and long years after, when you have forgotten all about the patient—his or her ailment, and your opinion so haphazardly given—that baleful prognosis will be a gaunt spectre in that patient's mind, productive still of anxiety, foreboding, and fear, if not worse.



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## ORIGINAL COMMUNICATIONS.

#### THE LIMITATIONS AND SCOPE OF OFFICE TREATMENT IN GYNECOLOGY.1

BY GEO. ERETY SHOEMAKER, M.D., Gynecologist to the Presbyterian Hospital, Philadelphia.

It has been the fortune of the writer to inquire into the medical history of patients in private practice from many widely separated localities, sixty-five cities and towns being represented in one year. It has been more than interesting to find what a large proportion have tried the irregular psuedomedical cults, even though they claim that their regular physicians are well-known and capable practitioners. There is some reason for this, and it has a bearing on the present subject.

Using "gynecology" now in not too narrow a sense, as a branch of medicine and surgery leading to an understanding and study of the maladies which distress women, it includes various associated fields which must be covered when dealing with the concrete case. Certainly a study must include the intestine, kidney, bladder, and often the gall-ducts. Indeed, to understand women and their ills one must be something of a neurologist and all the time a student of human nature.

In the period of gynecological practice which preceded the accurate knowledge of pelvic disease, office treatment had a large vogue. Later arose a new pathology, based largely on the inflamed tubes. Active operating surgeons cast reflections on the scientific standing of those who made office applications. We have now, however, reached a period where from the

study of pathological conditions on the operating table we are no longer under the control of the dogmatist who vituperates all who see that some forms of disease do not require operation. Nor yet are we convinced by that neurologist who fails to see anything in the diseases of women except surgery for tumors or else rest cure.

While it is true that since the advent of surgery the office treatment has become relatively less important, it is a grave question whether the swing has not been too far, as in therapeutics, toward a nihilism which is far from helpful to our patients and not creditable to us who profess to have at heart the health, comfort, happiness, and safety of the individual patient.

Uneducated and commercial cults have recently flourished, have, temporarily at least, taken many of our intelligent patients, and have in part usurped our position as advisers and helpers. Why?

Aside from dogmatic promise, which is indefensible, they do something, which as far as that goes is at least psychologically commendable. Many chronic sufferers are tired of being analyzed, to be finally told that they have no operable organic disorder, and that they should take nux vomica and a change of air.

I once suggested to a lady that she see an oculist. She said: "I have been diagnosed in every principal city from San Francisco to New York, but no one finds

<sup>&</sup>lt;sup>1</sup>Read before the Lycoming County Medical Society, Williamsport, September, 1911.

anything. Now I am suffering from a fearful headache, and I want you to do something for it."

A gynecological patient asked me to treat her boy's ear. As the matter seemed a simple one I suggested that her family physician, whom I knew, could do it. She answered: "He is most unsatisfactory. He never makes an examination of anvthing, and never treats anything; he simply writes a prescription." That is the point. We must do something, but as scientific men and as honest men we must do the best that is known in the right direction. Has one a right to assume that a pain is functional, dismissing the patient with a nerve tonic? She feels miserable; a routine prescription will send her to the osteopath, and we should be able to give more help than he. If the condition is neurotic only no local treatment is justifiable, but many things are dismissed as neurotic without real investigation, and behind many a neurosis is a nagging, real distress. Some men never examine a rectum, some never a spine; many never properly study a stomach, bladder, or kidney; and more never properly examine any pelvic organ. More and better examinations would lead to fewer diagnoses of so-called rheumatism, just as fewer "malarias" are now seen. A lesson of overdosing was learned from homeopathy. While now we smile at the absurd diagnosis of dislocation made by our neighbors the osteopaths, let us not forget that there is such a condition as movable sacroiliac joint, which some had overlooked, and that some sciaticas, for example, have a physical basis here.

A patient from another city recently mentioned a cure of constipation by osteopathy. Inquiry showed that it was permanent and was due to massage. This happy end should have been accomplished by the regular physician; not that he should have personally given massage, but having excluded by office study other causes than atony, and following the work of a good masseuse, he could have kept the patient up to a regimen, personally noting the

changes. Electricity will really help, and may with little loss of time be personally given while attending to the other details which are essential to success. General directions are not grasped and are rarely followed unless personally checked up by the physician.

Diagnosis is at the bottom of all treatment, but in gynecology it defines sharply what may be done in the office. It is not fair to so treat early carcinoma, but it is not fair to radically operate on the infiltrated patient. It is not fair to treat pyosalpinx or relapsing appendicitis with tampons and electricity. Nor is it fair to place a pessary against unreduced retroversion or an inflamed tube. Exploratory operation may not be fair, and it cannot be if a little office treatment and patience would make clear a gouty pain or trouble due to sluggish living.

Faulty pelvic diagnosis is not usually due to lack of x-ray picture or differential blood-count, but to failure to use the plain old facilities intelligently. Nearly all the information which the skilled diagnostician obtains he gets from:

- 1. A short systematic history of cardinal points.
- 2. A good light, an empty bowel, a proper position on a table, and from gentleness.
  - 3. The trained touch.

Valuable as the laboratory methods often are, the points just mentioned outweigh them completely.

Too much stress cannot be laid on the systematic card history of every case when first seen. Nothing will replace it later.

## OFFICE TREATMENT.

It is understood that surgical conditions are excluded absolutely except in the case of the absolute refusal of the patient to undergo operation. Fibroid tumors were electrically treated for a time, but I know of no competent man who would advise this at present. All growing tumors, all those complicated by attacks of peritonitis, all cysts, and all large growths require re-

moval, whether benign or malignant. Fibroids only as large as a teacup, not bleeding, growing, or obstructing, need neither treatment nor removal. Unlike the early carcinoma, the widely infiltrating disease should be first destroyed by cautery at home or in hospital, and then when granulation is well established may be treated in the office with very great benefit. It is not fair to abandon these patients to a hopeless life with morphine and a douche when they may be made infinitely more comfortable. One of the best methods which also prevents the offensive decomposition of discharges is the application of acetone weekly or oftener. speculum is used to protect the sound tissues while a strip of gauze saturated with acetone is packed against the ulcerating point. It may remain there for half an hour with advantage, the excess being carefully removed after the withdrawal of the gauze and a vaselin tampon inserted. Very small and superficial recurrences after operation may be cauterized almost painlessly with the electrocautery point. There is at the present time nothing known which inhibits cancer growth so effectively as the actual cautery when it can be applied. Especial care should be taken, however, not to use tenaculums and so start grafts. Digestive powders are of some use in cleaning up foul surfaces, but are far inferior to acetone.

Uterine prolapse was at one time cured with difficulty; this no longer is true. The patient must be very feeble indeed who cannot bear an anesthetic skilfully given while this form of hernia is cured. Some, however, especially the aged and timid, absolutely refuse operation, and these may be kept fairly comfortable by intelligent care.

Lacerated cervix should always be prepared for operation by local treatment, especially the puncture of retention cysts. Otherwise a more or less mutilating resection is required.

The use of the pessary opens a broad

subject, on which there is a variety of opinion. Mechanical ability is essential on the part of the physician. In a limited field, however, its value is undoubted-for example, in acute retroversion following a fall or heavy strain. Again a few weeks after labor or miscarriage, when the uterus is soft and heavy, while its supports are relaxed, if the organ be allowed to assume the retroverted position this will be permanently retained; while if on examination in the third or fourth week retroversion is found, and it be immediately reduced and retained in position by a pessary, the parts will involute in a correct position, probably allowing the patient to escape either permanent disability or an operation. After three or four months the pessary may be discarded, but while it is worn strict supervision of its efficiency will be required or harm will be done. No pessary should be worn permanently; it should rather be discarded and a cure obtained by operative means.

Microscopical and cultural demonstration of the gonococcus is most necessary. If present there is much less chance for conservative operation on the tubes. If undertaken at all the local treatment of gonorrhea belongs to the office in the subacute and chronic stages. It requires direct application to the vagina distended in a gravity position.

Tuberculosis of the tubes if suspected or demonstrated requires early surgery, which removes the focus at once and, if the process is localized, as it often is, cures the patient. No time should be lost by serum or other treatment.

Bladder diseases are under direct inspection by the modern small-caliber electric cystoscope, which can be readily used in the office without pain.

Minor degrees of inflammation of a chronic type, involving uterosacral ligaments, broad ligaments, the remaining adhesions after peritonitis in some forms, minor and non-surgical degrees of ovaritis, etc., may be greatly helped toward cure by a systematic use of the galvanic or other

current, tampons, and medication. sons so affected often suffer much disability and distress, deserving painstaking at-Many surgeons refuse to have anything to do with them, as a condition must be operative or nothing in their eyes. Surgery, however, has nothing to offer and is not justifiable here. If a physician cares to devote the necessary time and the patient is anxious to get well, very satisfactory results can be obtained, but diagnosis must be clear or there will be disappointment. There is a group which has been operated on (of course, by some one else) where the symptoms remain. Are not operative patients often dismissed too soon, with many discomforts which could be helped?

Vibratory massage has no place in gynecological practice. The use of highfrequency currents and the therapeutic x-ray are on an experimental basis as yet, though praised by a few who have used them systematically. This field needs analytical study.

Sinusoidal and other currents have in my hands given considerable relief in traumatic neuralgias or nerve involvement in scars.

Aseptic office technique is one of the most important of the advances of late Gloves should be used in every case, and after boiling they may conveniently be thrown in carbolic solution. serve to protect both the physician and patient. Were it not for frequent violations of the rule, it would seem unnecessary to say that all instruments should be boiled before and after using. Especially is the boiled and aseptically used catheter most important. A useful practical method of handling the flexible catheter, which is abused so often, is to pour a lubricant from a collapsible tube upon a bit of sterile gauze, now supplied in small pieces separately wrapped and called "individual dressings." With this bit of gauze the catheter may then be aseptically lubricated and introduced.

Curettage in the office without anesthesia cannot be too strongly condemned. The field cannot be thoroughly washed or sterilized, hence the patient is exposed to infection. Many cases of salpingitis I have seen which had originated in that way, and it should never be done. Give them ether at home, boil the instruments, and make the field aseptic. This applies with especial force to the puerperal state following miscarriage.

There are a great many patients who are made very uncomfortable by comparatively minor conditions. They may not know what is the matter, but they do know that no greater health and comfort follow ordinary medication. It is necessary to go directly to the root of the trouble if that can be found. Take such a peace destroyer as pruritus ani or vulvæ, or a local eczema due to an irritating discharge. It may tax all our skill and ingenuity, but it is certainly a duty to search out and cure every source of irritation. Not only must skin action, kidney function, diet, exercise, and bathing be regulated, but such conditions as hemorrhoids, fissures, and other rectal diseases, as well as enterozoa, must be looked for and cured. We must get rid of caruncles, stop irritating discharges, subdue vesical irritation by local application to the trigone, stretching the urethra by sounds for chronic urethritis, etc. If a woman gets out of bed eight times at night from an irritable and curable bladder trigonitis, she suffers from lack of rest just as much as though the cause were in the nervous system, besides being made liable to eczema and other irritations from local wetting.

My plea is not that we shall neglect the greater things, not that we shall alarm or impoverish patients by undue attention to trivialities, but that as earnest men dealing with those who are really suffering, and who are anxious for a deserved cure, we may perhaps revise our too scientific attitude, and not too much despise the day of small things. Of course, each must choose

for himself what he cares to do. A very few are too busy with major work to attend to office practice; some are too indolent to study minutiæ; some have no interest in details of any kind and only regard spectacular conditions. For the conscientious man of wide knowledge there is waiting in any community a considerable field among those who have had or do not need surgery, and who will appreciate intelligent attention.

1831 CHESTNUT STREET.

#### THE VALUE OF EXTRACT CORPORA LUTEA.

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The annoying symptom-complex associated with induction of the artificial climacteric is one of the unfortunate circumstances following the removal of both ovaries, and more rarely and to a minor degree that of one. We shall not here enter into a description of the symptoms, as they are many and varied, differing in the individual case, but that such may be serious and the condition at times become a menace to the life or future well-being of the patient is well established.

Endeavoring to overcome this troublesome postoperative phase, the writer began about two years ago to investigate and then experiment with the extract of the entire ovarian substance and also with extract of corpora lutea, prepared by Parke, Davis & Co. The effects from the entire gland preparation were not encouraging, but so gratifying were those following the use of corpora lutea extract that it was also used in disturbances coincident to the normal menopause, and in derangements depending, in his opinion, upon ovarian disease resulting in decreased or perverted function of these glands.

At the present time it is regarded as true by most physiologists that aside from the ovarian province of ovulation, these glands also secrete a peculiar material which, accepted into the system, plays an important part in the maintenance of the normal female physiological balance in the same way as it is supposed that the sub-

stance secreted by the plasma or interstitial cells of the testicle performs a similar function in the male. Whether, however, this material is secreted by the medulla, cortex, or Graafian follicle of the ovary, or is the result of a secretive function of the entire ovary itself, or a process associated with the formation or presence of the corpora lutea, is a question the answer to which is still in abeyance.

It is not the writer's present intention to enter into an extensive exposition of the probable reasons why the use of extract corpora lutea in selected cases frequently gives the hoped-for result, for at best, in the light of our present knowledge of the complete function of the ovary, the use of extracts of this organ is still, to a very large extent, empirical. In view, however, of the great interest shown in all forms of organotherapy, he submits deductions based upon a clinical experience of about eighteen months, trusting that such may be of some positive or negative interest.

Attempting to reason why results from the use of extract corpora lutea so far exceeded those following the use of the entire ovarian substance, the writer arrived at the following briefly stated conclusions:

Change from the neutral sex type, such as filling out of the mammæ, growth of pubic hair, gradual development of facial and other physical and temperamental characteristics, in the female become decidedly apparent only after the establishment of the menstrual epoch. This at least is supposed to be closely correlated with the ripening of the Graafian follicle and extrusion of the ovum, immediately followed by the formation of lutein cells and the corpus luteum of menstruation. "Fraenkel believes the cells of the corpus luteum are the source of an internal secretion necessary for the life of the fetus. Removal of corpora lutea causes abortion, but this does not occur if a corpus luteum be grafted in some part of the body" (Green-Bosanquet).

The lutein cells of the corpus luteum show many points of similarity to the plasma cells of the testicle, most prominent of which is that both contain a peculiar granular yellow pigment. Some writers have gone so far as to advance a hypothesis that the toxemias of pregnancy may in some way be due, in part at least, to perverted ovarian secretion.

With the establishment of the climacteric there ceases to occur a rupturing of the Graafian follicle, extrusion of the ovum, or consequent formation of lutein cells and corpus luteum. The blood supply of the ovary is reduced, the entire gland gradually atrophies, or the medullary tissue infiltrates the corticular zone, so that the gland ceases to perform its specific functions. glandular tissue of the breasts atrophies, or in those inclined to obesity fatty infiltration of this as well as fatty deposits in other parts may occur. The features at times become somewhat coarse, a growth of hair may develop on the face, the voice in many instances loses its soft timbre, quite frequently the woman loses "that undefinable something known as feminine charm," and on the whole there seems to be an effort on the part of nature to a reversion to the neutral type.

In view of the foregoing, it seems plausible to the writer that the lutein cells forming the corpus luteum exert an important influence upon the peculiar female physiological balance, and theoretically at least the introduction of this substance into a system deficient in the normal secretion

should give good results, just as the use of thyroid extract in conditions dependent upon subnormal function of the thyroid gland has been of benefit. The writer will try to show that this is practically true by the report of observations. The following groups represent a total series of 51 cases treated with the corpora lutea:

Group 1.—Eleven single ovariotomies. Seven were performed by the writer, and four which had been operated on by others were seen by me within six months after the operation. In six of these cases the symptoms entirely disappeared, two showed improvement, and three apparently showed no effects from the treatment.

Group 2.—Nine double ovariotomies. Six were performed by the writer, and three, which were operated on by other surgeons, were seen by me at intervals varying from two months to two years after operation. Two cases are included in this group which will be reported in detail. In each of these cases one ovary had been previously removed by other operators, and the remaining one in each case was removed later by the writer. In four cases there was a disappearance of all symptoms, two cases showed more or less improvement, and one was apparently not benefited. Two of the cases in this group seemed to get worse under the treatment, and medication was discontinued on account of tachycardia.

Group 3.—Fourteen cases of menopause with symptoms appearing between the ages of forty-one and fifty years. In six of these cases the symptoms disappeared at a period ranging from three weeks to five months, two made marked improvement, and six were not noticeably benefited.

Group 4.—Seventeen cases of ovarian disease of various types. In the majority of cases in this group operation was definitely indicated, but refused by the patient. It is fair to say that general tonics and local treatment were usually given in conjunction with the extract of corpora lutea to this class of patients. In five of these cases,

three of which were simple ovaritis, the results were good, two were slightly improved, and ten were negative.

In all cases included in these four groups corpora lutea was administered in 5-grain capsules three times daily.

SUMMARY OF CASES.

No. of case.	Type of case.	Cured.	Im- proved.	No effect.	Worse.
11 9 14	One ovary removed. Both ovaries " Menopause	6 4 6	2 2 2	8 1 6	2
		16	6	10	2
17	Ovarian disease, no operation	5	2	10	

In the last group none of the five cases were absolutely cured, but the condition was decidedly improved.

In a few days after ingestion of this preparation vascular stimulation was observed in each case to a greater or less extent, and usually disappeared after a state of tolerance had been reached.

In some cases decided flushing of the countenance occurred, or an increase of the same where it had previously been present. In two cases tinnitus aurium occurred, and in 14 cases varying degrees of dizziness. In one case tachycardia developed to such an extent that the drug was discontinued. In about 17 of all the cases the pulse-rate rose from 80-90 to 110-132. In the rest of the cases the increase of rate and tension was not so marked. In most of the cases there was an improvement in the general condition, as in appetite, sleep, etc., though in all cases it should be understood general treatment was also given.

The following is a curtailed report of a few cases taken at random from my case records:

Case 1.—Miss J. E., aged twenty-one. Diagnosis: Double specific pus tubes and ovaries. Operated at St. Vincent's Hospital, March 12, 1910. Discharged March 28, 1910 (patient living out of city). Returned June 13, 1910, with symptoms of pain in back, dragging in limbs, some flashes of pain along spine, etc. Extract

corpora lutea given, gr. 5 t. i. d. Patient reported August 4, 1910, saying improvement began about ten days after beginning medication, and has been entirely well since July 25.

Case 2.—Mrs. M. L., aged twenty-eight. History of chronic tubo-ovarian disease and acute peritonitis seven years ago. Present diagnosis, double pyo-oöphoro-salpingitis and acute peritonitis. Operated at Deaconess Hospital, April 5, 1910, at 10.30 P.M. Diagnosis verified; median incision; six or eight ounces free pus in abdominal cavity. Right tube ruptured and general Both tubes and ovaries readhesions. moved; wound closed in layers. Abdominal and vaginal drainage, Fowler's position. Wound healed by first intention. Patient discharged from hospital April 23, 1910, and returned to her home out of city. July 18, 1910, patient wrote complaining of symptoms which were attributed to induced climacteric. Advised to take extract corpora lutea, gr. 5 t. i. d. Did not hear from her until November 5, 1910, when in reply to a letter she stated symptoms were relieved after one to two months' use of the drug.

Case 3.—Mrs. B. A., aged twenty-seven. Both tubes and left ovary removed four years previously by another surgeon. Present status: Cystocele and rectocele; slight lateral laceration of cervix; stenosis of os; endometritis; cystic degeneration of right ovary; chronic appendicitis; retrodeviation of uterus, third degree. Intestinal and omental adhesions. Operation at St. Vincent's Hospital, March 24, 1910. nosis confirmed; necessary vaginal repair. Median abdominal incision; adhesions broken up and part of omentum removed. Right ovary and appendix removed; anterior uterine fixation; incision closed in lay-Discharged from hospital April 14, 1910. Did not see this patient again until July 9, 1911, when I was called to see her at 2 A.M. and found her having a uterine hemorrhage. She said hemorrhage had begun without warning about three hours before. Upon questioning she admitted to indefinite climacteric symptoms for about six months, not sufficient in severity, however, to cause her to see her physician. Careful abdominal and vaginal examination gave negative findings, with exception of slightly enlarged uterus. Patient bled intermittently for a week before hemorrhage was completely controlled.

The main previous symptoms had been impaired memory, pain in back of neck, inability to change money correctly, etc. About July 20 these symptoms increased, and there also occurred decided abdominal distention, pain and diarrhea, extreme tenderness in hepatic region, terrific pain in head, increase of pulse to 100, temperature never above 100°. Reflexes increased and patient peculiarly sensitive to light and sound. Pupils slightly and unequally dilated. The writer's diagnosis was passive meningeal congestion, probably due to some form of portal obstruction, and this was concurred in by several others who saw Patient made a slow recovery, and in November, 1911, still complained of symptoms which were attributed to delayed, induced climacteric. The writer had not previously suggested extract of corpora lutea in this case on account of its effects on the cardiovascular system, but now pulse and heart being in good condition, she was put on extract corpora lutea, 5 grains morning and night, increased after two weeks to three times daily. One drachm of syrup hydriodic acid three times daily was also given. The patient gradually improved, and at this time (January 12, 1912) is apparently well on the road to permanent improvement.

Case 4.—Mrs. R. J. W., aged twentynine. Seen April 5, 1911. Diagnosis: Prolapsus uteri, omental and intestinal adhesions, cyst of left ovary and broad ligament. Right ovary, both tubes, and appendix removed by another surgeon some years previously. Operated at Deaconess Hospital,

April 29, 1911. Amoutation of cervix uteri: repair of anterior and posterior vaginal wall. Removal of left ovary, part of broad ligament, and part of omentum. Returned home from hospital May 20, 1911. About six weeks afterward reported at office complaining of abdominal distention, lancinating pains in back, hot flushes, and night Complete physical examination negative. Put on extract corpora lutea, gr. 5 t. i. d. Sweating ceased in five days; general symptoms improved in two weeks and entirely ceased in four weeks. Patient visited out of city for two months, and reports that when she felt well had stopped taking capsules, and after about four weeks noticed a return of symptoms, especially sweating. Was again put on extract corpora lutea for one month, since which time she has had no return of symptoms.

Case 5.—Mrs. L. G., aged forty-eight. Seen June, 1911. For four months previously intermittent and scanty menstrual flow, not attended with especial pain; other usual symptoms of menopause concentrated in severe tugging of muscles of neck, back, and posterior thighs. Frequent spells of irritation and depression. Patient started on extract corpora lutea, gr. 5 t. i. d. No improvement for six weeks. Treatment persisted in, gradual improvement beginning about September, 1911. At this time (January, 1912) patient still has menstrual flow, but in other respects reports she feels better than she has in years.

Case 6.—Mrs. S. T., aged forty-four. This patient has had a prolonged climacteric period, symptoms of a classical nature first appearing about three years previously. Irregular menstruation still persists, and she has alarming spells of melancholy or hysteria. Physical findings are negative, examinations having been made by several surgeons, internists, and neurologists. Has been on extract corpora lutea for about a year, with negative results.

432 NEWTON-CLAYPOOL BUILDING.

# QUININE AND UREA HYDROCHLORIDE SOLUTION AS A LOCAL ANESTHETIC FOR TONSILLECTOMY.

BY HARRY KAHN, M.D., Attending Oto-Laryngologist to Michael Reces Hospital, Chicago, Ill.

The tonsil is recognized as one of the portals of infection for many diseases, therefore to cut off the protruding portion of the offending organ and leave a disease-breeding stump buried between the faucial pillars is faulty surgery. The most offending tonsils, the buried and the sessile varieties, cannot be removed by tonsillotomy, as has been practiced in the past. The medical profession is agreed, and the laity demand, that the whole of the diseased tonsil shall be enucleated.

Tonsillectomy is the operation of election for adults, as it is for children, and the removal of the tonsil has become a major instead of a minor procedure. Therefore, the operation should be performed in a hospital and not in the office.

The adult patient has given the surgeon the most concern because the fallacious notion has gone forth that the removal of the tonsil of the adult is painful and fraught with danger of serious hemorrhage.

The choice of a drug to produce analgesia in the adult has always been a matter of much importance to the surgeon. The ideal local anesthetic should be nontoxic, non-irritating, produce sufficient analgesia to render the removal of the gland painless, and not increase the danger of a hemorrhage.

The drugs used in the past—cocaine hydrochlorate, beta-eucaine, etc.—when employed in sufficient quantity to produce complete anesthesia, many times caused symptoms that were alarming both to the patient and the doctor.

The solution of quinine and urea hydrochloride, one per cent, comes nearer the ideal local anesthetic than any other drug so far introduced for this purpose. It is non-toxic in the dosage required for complete local anesthesia; it is non-irritating, and reduces the danger of hemorrhage to a minimum. In the Michael Reese Hos-

pital, it has been observed that when the quinine and urea hydrochloride solution has been used in tonsillectomy there is almost no bleeding after the patient has left the operating-room, and further, in this hospital a secondary hemorrhage has never been known to follow the use of this drug.

The technique for the operation of tonsillectomy is as follows:

A short time before the operation the patient is given a full meal for the following reasons: First, it has been observed that the analgesic drugs act more profoundly after a patient has taken a full meal; secondly, the patient is more composed; thirdly, after the operation the condition of his throat will prevent his swallowing solid food for a few days.

The patient takes his place on a laryngological chair. His body is covered with a sterile sheet, and in his hands he holds a sterile pus basin. The operator is seated directly in front of the patient. When all is ready, an applicator, armed with a tightly wound pledget of cotton, is saturated with 20-per-cent cocaine hydrochloride solution and applied once to the tonsils, pillars, and the soft palate to produce superficial anesthesia. A sterile hypodermic syringe, with a tubular throat attachment and a fine needle, is filled with a 1-per-cent quinine and urea hydrochloride solution. The solution is injected into the supratonsillar space, two injections are made into the anterior pillar, one at the junction of the upper and the middle one-third and one at the junction of the middle and the lower one-third, the same relative points on the posterior pillar, and a few minims into the tonsil itself. For a successful analgesia two important points must be borne in mind: First, sufficient solution must be injected, not less than 45 to 60 minims for each tonsil; secondly, a wait of not less than ten or fifteen minutes is imperative in order

that complete analgesia be obtained before the operation is begun.

The assistant takes his place on a chair to the right of the operator, places his left arm next to the patient under the right arm of the operator, and holds the tongue depressor in the mouth of the patient. A Pierce knife is now inserted as high as possible into the supratonsillar space, rotated downward and forward beneath the anterior pillar, and the tissue cut. Several sweeps are usually necessary to loosen the pillar from the structure of the tonsil. The tonsil is now grasped with the small-toothed Tydings tonsil forceps and pulled outward and forward. The tonsil being firmly held, the remaining adhesions are cut with a long Allport tonsil knife. The gland, being still held by the forceps, is shelled out of its bed and everted by the use of the handle of a long lemonade spoon. The wire attached to a Tydings snare is now passed over the grasping forcep, back over the protruding gland to its base. The snare is slowly closed and the tonsil is cut off intact, with its capsule attached. The removal will be followed by a rather smart hemorrhage that rapidly checks itself.

The patient is put to bed for twenty-four hours. No gargle or other medication is given for twelve to eighteen hours, at the end of which period a cathartic is given and a hot salicylic acid gargle is ordered to be used every two hours for the next day or two. Following this a mild antiseptic gargle is prescribed.

In conclusion, I beg to again call attention to the following essential points:

First, a relatively large volume of quinine and urea hydrochloride solution must be injected, not less than 45 minims, into each tonsil and its surroundings.

Second, a wait of at least ten and preferably fifteen minutes is essential before the operation is begun.

Third, operation is painless, and danger from hemorrhage is reduced to a minimum.

31 N. STATE STREET.

#### NOTE ON THIOSINAMINE IN ARTERIOSCLEROSIS.

BY G. FRANK LYDSTON, M.D.,

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While admitting that deductions drawn from a limited experience in the administration of a drug are unreliable, I nevertheless believe that this brief note of a case is striking and worthy of record.

I presume that it will be generally admitted that arteriosclerosis, when once established, is intrinsically progressive and does not tend to recovery or even marked improvement. Especially is this true of the senile type. Great improvement while the patient is taking a given drug may, I think, in such a case as the one herein recorded, be fairly attributed to the action of that drug. In any event I submit the case on its merits.

Captain X., aged seventy, bachelor; occupation, fire insurance. Heredity excellent. One brother died at sixty-four with some

disease or other which was said to have been associated with disease of the arteries. The captain's habits had always been unimpeachable, a matter on which I required no evidence, as he had been my patient for nearly thirty years. He had served three active years in the Civil War, but came out apparently none the worse for his experience. There was no history of syphilis. In 1885 I treated the old gentleman for a tight stricture and a secondary pyelocystitis. He recovered, and, strange to say, although not systematically sounded, had no especial trouble thereafter.

About four years ago the patient developed neuritic symptoms and had several retinal hemorrhages. The arteries meanwhile had become markedly enlarged and hardened. The retinal trouble cleared up,

but recurred from time to time. Potassium iodide was given, but I was always skeptical as to its having had any particular effect. In the spring of 1910 the old gentleman developed an attack of grippe with a secondary renal infection. There was almost complete anuria and a condition verging on coma for several days. Recovery, however, was fairly prompt.

During the last two or three years of his life Captain X. suffered from considerable gastric disturbance. For this condition I referred the case to my friend, Dr. M. M. Portis, who was fortunate enough to give the patient complete relief.

August 1, 1910, the patient developed paralytic symptoms, pronounced by Dr. L. H. Mettler to be senile polyneuritis. The patient was unable to walk for several weeks. He finally improved and was able to walk, but his gait never became normal. During the progress of the case the arteries became phenomenally enlarged and hardened. The brachials were as large as an ordinary lead-pencil and so prominent that they could be seen at a considerable distance. The heart showed no evidence of gross disease. The blood-pressure became very high, ranging from 180 to 200, the latter figure being attained a few weeks before death.

The usual routine management of such cases was followed, and the patient went along quite comfortably under careful nursing and dietetic supervision, save in one respect, viz., he worried continually about the condition of his arteries. He spent most of his time feeling of his temporals and brachials and estimating the chances, as he expressed it, of their "growing up altogether and becoming solid."

I had had some apparently favorable experience with thiosinamine in other conditions, and finally concluded to try the drug on my patient. Beginning with gr. ½ t. i. d. in capsule, the dose was gradually increased to gr. j t. i. d. The course of treatment extended over a period of about four months. The result—or appar-

ent "result"—was remarkable. The temporal arteries were reduced to a size no larger than the temporals of the average man of seventy. The brachials were reduced so that they could be detected only by the touch. The radials were proportionately reduced. All of the accessible arteries were perceptibly softer. The high blood-pressure was not altered. The relief to the old gentleman's mind was remarkable. He no longer worried about his arteries, nor did he search for them. The improvement continued for the last six months of his life, and the patient was wont to say that he wondered why he did not get perfectly well when his arteries were "well." There were no urinary symptoms of any consequence save the characteristic large quantity of urine of low specific gravity until five days before the patient's death, which occurred in February, 1912. Uremic symptoms finally developed, and the patient died in coma. There was no change in the urine for several days after mild delirium set in, but two days before death granular and hyaline casts and albumin appeared in the urine.

The condition of this patient's arteries before the thiosinamine was given will be verified by Drs. J. B. Herrick, Wm. H. Wilder, M. M. Portis, L. H. Mettler, and Ralph Johnstone. Dr. Johnstone is in a position to testify to the great improvement in the blood-vessels, as he saw the patient frequently both before and after the treatment.

82 N. STATE STREET.

# HEMOLYTIC JAUNDICE DUE TO MALE-FERN.

The Lancet of April 6, 1912, writes editorially on this subject, pointing out that jaundice is a rare result of the administration of male-fern, and, like other toxic results (e.g., amaurosis and sudden death), has been observed principally in Germany and Italy, where doses of the ethereal extract as large as from 15 to 20 grammes

are given. In 1894 Grawitz investigated this jaundice and attributed it to an increased destruction of red corpuscles in the liver, as he found that their number in the blood was reduced after administration of the drug; but this conclusion was based on cases in which jaundice did not occur. In a recent number of the Progrès Médical Prof. G. Etienne and Prof. M. Perrin have described two cases in which jaundice occurred, and its hemolytic origin was conclusively shown. A robust man, aged twenty-nine years, suffering from tapeworm, took on September 1, 1910, at 5.45 A.M., capsules containing 6 grammes of ethereal extract of male-fern and 0.12 gramme of calomel. At 7.15 he suffered from colic and passed a normal stool. A quarter of an hour later an attack of diarrhea, lasting twenty-five minutes, began, and a complete tapeworm was evacuated. Vertigo and nausea followed, but ceased when he returned to bed. At 10 o'clock he noticed that his conjunctivæ and skin were yellow, and at 12 that the urine was "brownish." On the following day he came under observation with manifest icterus of the face and subjecterus of the trunk and limbs. The pulse was normal and not slowed. urine was turbid and contained urates in abundance and a trace of albumin. reactions for biliary pigments and salts were negative. The tongue was furred, but the appetite was preserved. On September 3 the pulse was 68, the splenic dulness measured 6 by 6 centimeters, the liver was normal, the tongue was clean, and the stools were normal. The red corpuscles numbered 4,146,000, and the hemoglobin amounted to 75 per cent. The red bloodcorpuscles in general were little deformed, but several were punctated, and there was some corpuscular débris. On September 5 jaundice was no longer distinguishable in the skin, but the conjunctivæ were sub-The red corpuscles numbered 5,icteric. 176,000. During examination they rapidly altered. On September 15 the red corpuscles were normal in every way.

April, 1911, the subicteric tint of the conjunctivæ still persisted.

In another case, communicated by M. de Gaulejac, a healthy man, aged thirty years, took 8 grammes of ethereal extract of male-fern with 1.2 grammes of calomel for tapeworm. The extract was taken in capsules containing half a gramme, two every ten minutes, and the calomel in doses of 0.30 gramme every quarter of an hour. simultaneously with the extract. hours after the taking of the first dose of the extract jaundice suddenly appeared, accompanied by great weakness. On the following day the liver was tender, but not enlarged. There was violent headache for three or four days, and incapacity for work for ten or twelve days followed. The jaundice lasted three weeks and the general weakness for more than a month. After the disappearance of the jaundice a discoloration of the mucous membrane remained until the patient recovered his strength. In this case the blood was not examined, but anemia was observed clinically.

It must be noted that in the first case the blood was not examined until fortyeight hours after the beginning of intoxication, and probably was already in process of restoration. The jaundice appears to be due to the action of filicic acid, alone or in combination with the essential oil contained in male-fern. It is curious that in the first case, while the extract appeared to have no immediate action on the liver, that organ was subsequently affected, for the subicteric tinge of the conjunctivæ persisted. though in these cases the hemolysis takes place principally in the blood, perhaps the liver plays a secondary part. This view is borne out by the experiments of Van Aubel, who produced cirrhosis of the liver by repeated administration of filicic acid to dogs. The cases reported above show that malefern produces jaundice in the same way as other intoxicants, such as chloroform, essence of turpentine, pyrogallic acid, and toluylenediamine.

## EDITORIAL.

# THE RELATION OF THE SPECIFIC GRAVITY OF THE BLOOD TO THE TREATMENT OF CHOLERA AND CHOLERAIC DIARRHEA.

We have more than once called attention to the valuable contributions which have been made to this subject by Leonard Rogers, the Professor of Pathology in Calcutta, who is familiar to our readers because of the original contributions which he has made in previous years to our pages. While it is true that cholera is rarely if ever met with by physicians in the United States at the present time, his work shows that severe choleraic diarrhea may be treated in a similar manner with the methods which he employs in Asiatic cholera with advantage, and illustrates in an interesting way the application of simple laboratory tests in the control of therapeutic procedure.

In the issue of the Indian Medical Gazette for April, 1912, Rogers contributes an article in which, after mentioning the method of estimating the specific gravity of the blood devised by Hammerschlag, he suggests the simpler and more rapid method introduced by Lloyd-Jones. This method consists in having a series of small bottles of about 1/2-ounce capacity containing mixtures of glycerin and water of different specific gravity. A small drop of blood obtained from the finger is blown very gently from a capillary tube into the center of one of the bottles. If it sinks at once it is heavier than the fluid, and the bottle of higher specific gravity is next tried. Whereas if it rises in the first bottle, the lower one is taken and the operation repeated until the drop just floats in the center of the bottle for a second or two. Thus, if it rises in the bottle which has the mixture which gives a specific gravity of 1064 and sinks in the bottle which has a specific gravity of 1062, an intermediate number of 1063 is the approximately correct figure. Rogers points out, this method is a very quick and simple one and the apparatus

inexpensive. usually verv He starts with one bottle at 1048 and goes up to 1070, the normal specific gravity of the blood for an adult being 1056. If infants are to be studied, the lowest bottle ought to be as low as 1042, as the normal specific gravity for children under two years of The actual specific · age is about 1048. gravity of the mixture of glycerin and water should be verified with a reliable hydrometer, and a crystal of thymol may be added to each bottle to prevent the growth of molds.

It will be remembered that Rogers has strongly advocated the employment of a hypertonic salt solution in the treatment of choleraic conditions in which the specific gravity of the blood is abnormally high because of the drain produced by the intestinal discharges. He uses this whenever the blood-pressure is below 70 millimeters and the specific gravity over 1060. If the specific gravity is as high as 1063, indicating that a very great concentration of the blood has taken place, the transfusion should be used even if the blood-pressure is above 70 millimeters. When members of the Anglo-Saxon race are being studied he believes that a proper standard indicating saline infusion is a blood-pressure of 80 millimeters, as Anglo-Saxons run a somewhat higher blood-pressure than East Indians. The advantage of this method is that collapse is avoided or combated and uremia and pneumonia are avoided. quantity of saline which is injected intravenously amounts to from three to five pints, according to the gravity of the condition and the size of the patient.

That this method of treatment produces excellent results is shown from the fact that in 56 severe cases of cholera, all of which had a specific gravity over 1063 when first seen, there were 48 recoveries, or 85 per cent, two of the eight deaths being due to lung complications and occurring in patients desperately ill when ad-

mitted. When the specific gravity of the blood is as high as 1065 in an adult male, Rogers thinks that five pints should be slowly transfused. It will be recalled that this method not only combats collapse, but that it also later on tends to reestablishment of urinary secretion, for this secretion is commonly increased markedly a short time after the first injection is given. The later the patient comes under observation and the higher the specific gravity of his blood, the greater is the danger from renal inactivity.

When the specific gravity is as low as 1060, an ordinary normal saline injection may be used which is passed into a vein at the rate of about one ounce a minute, since by this slow method pulmonary edema is avoided, and under these circumstances one or two pints are sufficient. If it is not over 1060, one pint may be sufficient, and under these circumstances, too, the fluid may be given subcutaneously into. the abdominal wall rather than directly into a vein, and the injection repeated every four to six hours until the specific gravity falls to 1050 or even lower, but the injections should not be continued if the specific gravity falls below 1045.

In order to explain his method in greater detail, Rogers discusses the case of a wellknown European successfully treated by the intravenous injection of five pints of hypertonic saline and about 70 grains permanganate of potash by the mouth, the latter drug being given in this quantity within a period of five hours in keratin-coated pills made for him by Parke, Davis & Co. The result of this use of permanganate was that the rice-water stools changed to green stools within eight hours. At the beginning of the second day the specific gravity of the blood had risen a second time to 1064, and no urine was passed except a few ounces after the first intravenous injection, and this notwithstanding the fact that the blood-pressure was quite normal and the general condition of the patient Had it not been for the specific good. gravity test he would have been considered

markedly improved. In view of the fact that the specific gravity of his blood was 1064, two and a half pints of normal saline were transfused, which resulted in the reestablishment of urinary secretion. On the third day the specific gravity again rose to 1060, and a pint of normal saline was given subcutaneously and repeated in five hours. Again urinary secretion began, and later on nearly 300 ounces of urine were passed within forty-eight hours, with the elimination of all the toxins from the system and a great improvement in the general condition. Rogers believes that this case well illustrates the great value of estimating the specific gravity of the blood in controlling treatment, and he does not think that a patient is adequately studied and treated unless such estimations are made, believing that the specific gravity apparatus which he describes is as essential as the sphygmomanometer.

It is interesting to note in this connection that in the same issue of the Indian Medical Gazette Bishop details his experience not only with the administration of permanganate of potash internally, but reports the results which he has obtained from the intraperitoneal administration of hypertonic salt solution in cholera, which he believes to be somewhat more readily performed than the intravenous injection. Personally, we would prefer Rogers's plan, but when there are many cases to be treated Bishop's plan may be more convenient. He follows the same rules in regard to bloodpressure as are followed by Rogers, and uses a trocar and cannula which is passed through the abdominal wall just below and a little to one side of the umbilicus where the peritoneum is attached to the posterior surface of the anterior abdominal wall. The skin can be sterilized with iodine or a drop or two of pure carbolic acid. tissues are drawn taut and pulled toward the middle line immediately below the umbilicus before the cannula is thrust through The hypertonic solution is allowed to run in at the rate of a pint in four or five minutes, being of course adequately warmed, and the amount is governed by the blood-pressure. Both from his clinical experience and from autopsies, he is sure the intestine is never wounded.

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As we have already pointed out, these methods may be advantageously employed in all probability in severe choleraic diarrheas which threaten the patient's life and which present the same indications in the blood-pressure and in the specific gravity of the blood which are presented by those types of diarrhea which are not due to the comma bacillus. As a rule, it is probably better to give injections often and in moderate quantity than to give a very large amount at once, since if given too freely dyspnea and pulmonary edema may be induced.

## THE EVIL EFFECTS OF MENTHOL.

Menthol, the camphoraceous substance obtained from oil of peppermint, is so largely used in medicine for various purposes and so rarely produces disagreeable effects that few practitioners think of it as a substance which may possibly exercise an evil influence, yet we note in La Presse Médicale of February 7, 1912, a paper by Leroux in which he goes over the literature of this subject extensively and presents evidence to the effect that menthol is not always the harmless substance which it is thought to be. Indeed, he shows that the accidents from its use may vary from very mild untoward effects to those which are extremely grave. For example, in a newborn infant, for the purpose of facilitating nasal respiration and so permitting the child to freely nurse, there was introduced into the nares a drop of oil containing one per cent of menthol. The child immediately appeared asphyxiated and cyanotic, the pulse became imperceptible, and it was only after the child had been inverted and energetic friction and artificial respiration resorted to that the dangerous symptoms disappeared, after the expulsion from the respiratory passages of a considerable quantity of mucus. A somewhat similar

train of symptoms was also observed in a child of one month who had been given menthol in the same way, except that the circulatory failure resembled the untoward effects produced by chloroform. Leroux not only quotes a former paper of his but also one by Mayet, of Lyon, in which a girl of four months had introduced into the nares vaselin-menthol, and who suffered from such severe asphyxia in ten minutes that death seemed inevitable. Here, again, flagellation and suction upon the nares whereby mucus was removed from the respiratory passages, artificial respiration, a hot bath, and counter-irritation saved life. In still another child of ten months several drops of mentholated oil (two per cent), when introduced into the nose for the relief of a coryza, produced equally severe interference to respiration.

Altogether Leroux gives references to no less than thirteen articles by different contributors to this subject. Most of the cases reported have occurred within the last two or three years. Some of them have not only had obstruction of respiration accompanied by an excessive secretion of mucus, but there has also been evidence of spasm of the glottis with cyanosis, convulsive movements and syncope, and one case reported by Gomet, a child of one month having received in the nostrils vaselinmenthol of two-per-cent strength, very shortly developed intense dyspnea. other instances which he quotes the symptoms were by no means so grave as those already cited, but consisted in marked pain in the nose, intense irritation seeming to be set up by the drug. In one instance an intense conjunctivitis developed. In still another such an intense inflammation of the skin of the face occurred as to make it resemble erysipelas, as there was thickening of the skin, tumefaction with redness, and violent headache. We have seen several patients in whom the too free use of menthol, locally, in the nose apparently produced a herpetic eruption. Leroux points out that certain patients seem to develop a condition of "mentholism," which is analogous to cocainism or morphinism, in that the patient continually inhales the menthol vapor in order to get relief from nasal congestion, and that this produces a constant irritation with hypertrophy of the nasal mucous membrane, which can only be treated by galvanocautery or turbinotomy.

# THE PERCENTAGES OF ETHER VAPOR USED IN THE OPEN METHOD.

We wish to call attention to an interesting communication in regard to this subject published by Hewitt and Symes in the Lancet of January 27, 1912, the more so as the open method of giving ether, like the administration of ether itself when first introduced into that country, is now widely employed, and by virtue of the good results which follow its use is, we believe, doing much to supplant chloroform by ether in the practice of surgeons in Great Britain and Germany.

We may add that the open method is, in our belief, the only one by which ether should be given. It consists, as most of our readers know, in dropping the ether upon an Allis or Esmarch inhaler instead of pouring it upon a closed inhaler in a manner which was practiced some years ago. The plan, of course, uses more ether in that a greater quantity of the vapor escapes into the atmosphere, but it practically puts aside complications during and after operation to so large a degree that this so-called waste of ether cannot be regarded seriously. We are interested to know that Hewitt and Symes are strong advocates of the preliminary hypodermic injection of 1/100 to 1/120 of atropine three-quarters of an hour before the ether is administered, since by this means excessive secretion of mucus in the respiratory passages is prevented, and there is less danger of cardioinhibitory shock. In cases in which the patient is very nervous or there seems to be some special indication for it, morphine can be combined with the atropine, and this combination is now largely employed, although we agree with Hewitt and Symes in thinking that in the majority of instances the atropine alone is all that is essential. We are the more interested in this matter because as long ago as 1893, in a report made to the government of Hyderabad, India, the writer of this editorial and Thornton pointed out how greatly the safety of the patient is increased by this preliminary use of atropine, and for some years prior to that date we had taught students that this was true.

In most of their cases Hewitt and Symes state that they obtain the best results by starting the anesthesia with chloroform, administered drop by drop upon a Skinner's mask. By this means nervousness and hyperesthesia are dissipated. At the end of about two minutes the chloroform is replaced by a mixture of chloroform and ether (two parts of chloroform to three of ether), which serves to still further deepen anesthesia. This mixture is also used for two minutes, and at the end of about four minutes from the commencement of the administration of anesthetics, ether itself is used alone. By this means all struggling and excitement is put aside.

Concerning the main point of their investigation, namely, the amount of ether vapor actually administered by this method, they state that the percentage of ether supplied to the patient when it is dropped upon a Skinner's mask lies between five and fifteen, according to the freedom with which the liquid drug is employed. gauze is used in the inhaler it yields a higher percentage than lint or flannel, and the percentage depends roughly according to the number of layers. If the inhaler is supplied with flannel or lint so adjusted that all inspirations and expirations pass through the fabric, a more or less even percentage, usually eight to nine per cent, may be depended upon.

Finally, it is interesting to note that when Hewitt and Symes employ the open method they place a ring-shaped pad around the nose and mouth of the patient, and upon this place the inhaler. By this means the patient cannot inspire or expire air laterally but only through the gauze, lint, or flannel which is stretched over the wire frame.

## AN IMPORTANT STATEMENT CON-CERNING CHLOROFORM

At the last meeting of the American Medical Association a special committee appointed to consider the subject of anesthesia made a report to the Association which contains many important statements. To some of these a majority of the profession will be willing to subscribe, but to others we believe exceptions will be taken.

After pointing out the fact that in the administration of an anesthetic one who is trained in the use of such a drug should be employed, and emphasizing the fact that surgical anesthesia is a grave condition into which the patient is carried in order that he may be relieved of pain, the committee proceeds to disapprove of the common practice of permitting any one of a series of resident physicians to administer such drugs, and insists very properly upon every precaution being taken that accidents due to the lethal effect of these substances be prevented.

Against its first definite conclusion, however, we wish to enter a respectful protest. For many years we have taught that chloroform is a dangerous drug which should always be treated with the greatest respect and should not be employed unless there were good reasons for its use. In no way receding from this attitude, we believe that the statement of the committee is far too sweeping and may lead to serious legal complications in the event of a physician deeming chloroform the best drug for a given case and using it. The dogmatic statement that "the use of chloroform as an anesthetic for major operations is no longer justifiable" is, we believe, not correct without some qualifying clause.

The second statement, that "scientific investigation and clinical experience agree in demonstrating that necrosis of the liver follows in a by no means inconsiderable

percentage of cases" when chloroform is used is equally to be criticized. Much, of course, depends upon the meaning of the term "by no means inconsiderable percentage," As a matter of fact we believe that the percentage is exceedingly small.

We will watch with interest what our Southern colleagues have to say in regard to this condemnation of one of their favorite remedies.

Again, we believe that the statement that no precaution can be intelligently taken against the toxic effect of chloroform is not true without being properly qualified, for it has been shown that if the patient is well fed, and particularly if he has had an adequate quantity of carbohydrate food, the danger of postanesthetic chloroform poisoning is materially diminished.

The next sentence, in which the statement is made that "the surgeon whose patient dies in this manner a day or two after operation must face the responsibility of having knowingly taken an unnecessary chance and lost" is, we believe, also too sweeping in its nature, for even those who do not believe in the general use of chloroform are firmly convinced that in certain cases it is the anesthetic of choice.

In the third recommendation the somewhat surprising indorsement is given to chloroform as "a convenient drug for initiating anesthesia in alcoholics and other This statement, we difficult subjects." think, arises from the fact that the members of the committee working in a physiological laboratory are not as familiar with clinical experience as they might be; for if there is one universally accepted idea among surgeons in regard to chloroform it is that "alcoholics and other difficult subjects" [by which latter term we presume the committee means those who are athletic and who struggle against the anesthetic] are particularly susceptible to the lethal effects of this drug and exceedingly prone to suffer sudden death under its use.

While there is much that is correct in the fourth recommendation in regard to ether and the quantity of CO<sub>2</sub> in the blood and the condition which has been chiefly de-

scribed by Henderson, the chairman of the committee, as "acapnia," it is only fair to remind our readers that the relationship of this condition to accidents during the administration of anesthetics is not given the importance that Dr. Henderson attaches to it, by fellow-workers in other physiological laboratories, as was shown by the discussion which followed his remarks at the last annual meeting of the American Physiological Society.

We note with interest that the committee is favorably inclined toward the use of morphine half an hour or more before giving the anesthetic, although it points out that morphine has been objected to on the ground that it depresses respiration. As a matter of fact we do not think that this is the chief objection which can be urged against morphine under these circumstances. Unless given in too large a dose the morphine does not interfere with the exhalation of the anesthetic, but is prone to produce secondary depression and nausea after the patient returns to consciousness. The use of tanks of oxygen containing 8 or 10 per cent of CO<sub>2</sub>, as suggested by the committee, will not, we believe, result in the avoidance of this objection to the drug.

The statement that nitrous oxide is, of course, by long odds the safest of all anesthetics, is universally received as correct.

We cannot help wishing that before making some of the sweeping statements which we have quoted the committee had submitted its conclusions to practical surgeons and anesthetists. Under these circumstances results would have been achieved which would have been of greater value to the practicing physician and surgeon. We differ from the committee when it recommends that hereafter the President of the Association in appointing the Commitee on Anesthesia shall not appoint surgeons on it, but rather those who have made special investigations upon these drugs, presumably in the physiological laboratory.

If the resolutions which we have quoted serve to impress the profession in general with the very correct idea that all surgical anesthesia possesses elements of danger, they will undoubtedly do good. On the other hand, the dogmatic statement, already quoted, that the use of chloroform as an anesthetic is no longer justifiable, is not only incorrect but will certainly lead to some members of the profession being subjected to a lawsuit, although the best judgment of the physician in a given case has been that chloroform was the drug of choice. Such a sweeping statement as this does not receive the respectful attention that a more moderate statement would engender, and practically puts the opinion of the five members of the committee against the opinion and practice of thousands of active practitioners in the Southern United States and in other parts of the world where chloroform is, for various reasons, distinctly the drug which is employed, which ought to be employed, and which must be employed.

# THYMECTOMY IN HYPERTROPHY OF THE THYMUS.

Olivier ascribes the first operation done for the relief of thymus hypertrophy in 1896 to Rehn (Journal de Chirurgie, tome viii, No. 3, March, 1912). Since then 42 cases have been published. Subtotal and subcapsular thymectomy is the operation of choice. It is said to be extremely easy, readily borne by the youngest infants-indeed, so simple that every practitioner should be able to perform it without the least fear of any serious accident. It is, however, only a simple and safe operation under certain conditions. Drainage should never be practiced, since an open wound insures suppuration. In these young subjects, never under perfect control, preliminary or consecutive tracheotomy is never indicated, since this inevitably leads to infection. Nor should the operation be performed in the presence of infection, as from suppurating glands, unless the procedure be one of emergency.

The symptoms of enlarged thymus appear in two forms, the one continuous, the

other intermittent. In the continuous form the infant breathes badly and exhibits crises of suffocation lasting from ten to fifteen minutes, with periods of absolute apnea. There is often stridor, prominence of the sternal and parasternal region, and the detection of a tumor rising on expiration and palpable in the suprasternal notch. There is slight dulness on percussion and increased radiographic shadow. All these symptoms may be readily caused by tracheal or bronchial adenopathy, in which case operative procedure upon the thymus is of course useless. At times a differential diagnosis is impossible; it is of vital importance because four thymectomies done under a mistaken diagnosis resulted in four deaths.

When the cardinal symptom, stridor, is really due to hypertrophied thymus, thymectomy is absolutely indicated. In 28 cases of the continuous form operated upon there were eight deaths and 20 cures. Dyspnea disappeared immediately and permanently in 15 cases, rapidly in five. It disappeared and reappeared in three cases. The attack promptly cleared up in the great majority.

The intermittent form usually occurs in children somewhat older than the formeri.e., in the second half of the first year. The attacks come on suddenly and last four or five minutes, followed by an immediate complete return to health. There are intervals of weeks or months with no symptoms. The child falls each time as though dead in asphyxia. Aside from the attacks of suffocation, there are only two symptoms-stridor, most marked on expiration, without cyanosis or dyspnea, developing at night from the time the infant is laid down. and hiccough. The attacks are characterized by their suddenness and the complete absence of symptoms during the intervals. These symptoms closely resemble idiopathic spasm of the glottis. Indeed, this condition is often associated with hypertrophy of the thymus. This spasm of the glottis is not of thymic origin, but is due to an alteration of the parathyroids, which have

become insufficient. In idiopathic spasm of the glottis apparently nothing is to be hoped for from thymectomy, but hypertrophy of the thymus, without being the cause of the spasm, nor its effect, can exist with it and aggravate it. Therefore thymectomy should be performed. Although it will not prevent the spasms it will diminish them consider-Six thymectomies have been practiced under these circumstances, four being followed by complete cure and one without result, the infant having perished a few hours after operation without the least signs of asphyxia. One was followed by a temporary cure, but some months later the spasm recurred, though without cyanosis or complete apnea.

The author concludes that the treatment of hypertrophy of the thymus is always a surgical treatment, that it is an easy operation, attended by no mortality if drainage be omitted, that of the 42 cases reported 25 have recovered and 15 have died. In not a single instance was death due to the operation itself. Operation has cured the permanent dyspnea in 25 cases out of 28, and the stridor in 12 cases out of 16.

That the cause of symptoms incident to hypertrophied thymus is not laryngeal pressure alone has been well shown by clinical studies. It is rather incident to vascular obstruction, particularly of the great veins, to resultant heart strain, and to an added muscular spasm, which accounts for the hyperacute attacks. It is probable that with attention called to this condition many cases will be discussed and subjected to operation. Nor, given a correct diagnosis, is there reason to look for any but good results.

## THE MICROCOCCUS CATARRHALIS AS A CAUSE OF INFLAMMATION IN THE GENITO-URINARY TRACT.

Ayres, in discussing this subject in the American Journal of Surgery for March, 1912, considers only the two Gram negative diplococci found in the genito-urinary tract, namely, the gonococcus and its twin, the micrococcus catarrhalis. The meningo-

coccus, while morphologically simulating these organisms, has never been reported as present in the urethra, although it has often been demonstrated in the nose and pharynx, whilst the gonococcus has been found as the cause of inflammation in practically all the mucous membranes of the body. There exist, then, two microörganisms capable of producing urethritis and differentiable only one from the other by cultural tests. The clinical picture, however, is regarded by Ayres as highly characteristic. He states that a urethritis seen in the early stages, presenting a meatus with swollen and everted lips, a creamy discharge, a large amount of pus in the first specimen of urine, and Gram negative diplococci crowding the pus cells, is unquestionably a true gonorrhea, and for clinical purposes no culture need be taken. But a recent urethritis presenting a meatus which is not changed in appearance, a moderate to slight amount of discharge, not very much pus in the first urine, and Gram negative diplococci in the pus cells, may be a true gonorrhea, or it may be a urethritis due to the micrococcus catarrhalis. If the case is seen for the first time after the discharge has persisted for some weeks, the clinical picture of gonorrhea does not differ from that of a urethritis due to the micrococcus catarrhalis.

At times the microscopic picture of the micrococcus catarrhalis enables one to make a diagnosis of that infection. A typical smear contains immense numbers of Gram negative diplococci in colonies independent of the pus, and the pus cells are not crowded with germs, as is the case in typical gonorrhea. When such a specimen is found a probable diagnosis of micrococcus catarrhalis infection may be made. microscopic picture varies from day to day, sometimes showing a perfectly characteristic field and sometimes so closely resembling a gonococcic picture that it is impossible to say from its appearance which germ is present. It must be borne in mind that in the very earliest stages of gonococcic urethritis we find more gonococci outside than inside the pus cells. Gram negative diplococci entirely within the pus cells point strongly to gonococci, but may be the micrococcus catarrhalis. It is said that the micrococcus catarrhalis is more rounded than is the gonococcus.

If we find Gram negative diplococci in the pus cells and culture on nutrient agar shows the typical growth of micrococcus catarrhalis, we may be sure gonococci are absent, and under the same conditions, if we get no growth on nutrient agar, we are certain the germs in the pus are gonococci. But this is not sufficient from a medicolegal standpoint. Microscopic examination of the growth on nutrient agar is necessary in all cases. A culture from a gonorrhea of a few weeks' duration will often show a growth closely resembling that of the micrococcus catarrhalis, but under the microscope it will be found to be a Gram positive diplococcus, staphylococcus, or perhaps a bacillus. Also the microscopic examination must be made as soon as the growth shows on the agar, because an old culture of micrococcus catarrhalis changes from Gram negative to Gram positive.

The disease seems to be directly communicable by intercourse, with an incubation of from three to five days. It also develops, however, without any sexual history. It has a tendency to complete recovery if left alone and quick recovery if blennorrhagics are administered, but if active local treatment is employed inflammation is exaggerated. Under proper care the patient is well in from one to three weeks. Ayres advises the use of santal oil in fairly large doses, under which treatment cure is effected in a few days. If the discharge persist for some weeks local treatment is indicated, his preference being for silver nitrate 1:2000.

This contribution calls attention to a number of facts of vital importance, among which may be mentioned the inadequacy of the ordinary staining methods in making an absolute diagnosis of gonorrhea, the probability that a urethritis exhibiting the symptoms of a mild and short-lived gonorrhea may arise independent of actual intercourse, the circumstance that infection by the micrococcus catarrhalis, usually comparatively mild and short-lived, may be severe and complicated, especially if vigorously treated, and the importance of cultural methods where the clinical picture is incomplete. Moreover, there is an explanation offered of the astonishing number of cures reported from treatments which have been proven to be entirely inadequate in case of true gonococcic infection.

## REPORTS ON THERAPEUTIC PROGRESS.

## TREATMENT OF NOCTURNAL ENURESIS.

In the American Journal of the Medical Sciences for February, 1911, Ruhräh says that among the more interesting of the newer suggestions as to the treatment are the results which have been obtained by Williams. He has publishel two series of cases which he has treated by the use of the desiccated thyroid. McCready has also written upon this subject. Williams obtained wonderfully satisfactory results in all except one case, and it is interesting to note that in this case the child did not have a subnormal temperature. Williams administered one-half grain of the dried thyroid twice daily to children who were between two and six years of age, and this amount may be increased somewhat for older children. The increase in dosage should be made slowly, as directly opposite effects are occasionally induced by overdosage. The results as described by Williams in his own words were exceedingly dramatic.

Ruhräh has had occasion to use this method in a small series of cases, and these were not picked cases, as were evidently those in the series which Williams reports. In a small proportion of cases in which there were more or less marked signs that might be attributed to thyroid insufficiency, the results were quite remarkable. These were all children with adenoids and enlarged tonsils, or in some cases children in whom the adenoids and tonsils had been recently removed. In his series of cases the effect was obtained promptly or not at all. In every instance in which a favorable result was obtained a marked difference was

noticed after the administration of one or two doses of the drug, and in all cases within a week.

Another remarkable observation which coincided with the result obtained by Williams is that the undersized children gained weight rapidly. Williams mentions one patient who gained five pounds in a week, and another two pounds and seven ounces within a week. However, most of the patients gained less rapidly.

Another curious thing, which Williams has not mentioned, is that it has not been necessary to continue the thyroid over long periods of time, although in this regard Ruhräh may have been accidentally fortunate and relapse in some cases may probably be looked for.

In several instances in which the children had high, arched palates but no subnormal temperature, the thyroids had no effect whatever.

Of the other methods of treatment with the newer remedies one may mention briefly the following:

Attention has been called to the use of hypnotism in the treatment of nocturnal enuresis by Voisin. He has reported one interesting case, a boy, aged between thirteen and fourteen years. In this patient the urine was sometimes passed without dreams, and at other times was accompanied by dreaming of the act. After several trials, Voisin was able to put the boy into hypnotic sleep, and on the suggestion that he would not dream any more, obtained a disappearance of the incontinence for six days. He was hypnotized again and the same suggestion made, which lasted for three days. He then made an epidural in-

jection of artificial serum on three different occasions, and continued to hypnotize him once a week for a month. The patient has been entirely well for over a year. Voisin raises the question as to what the action of the epidural injection was in this case, whether the therapeutic effect was due to its action on the cauda equina, or whether it acted by suggestion. One is inclined to believe that the latter is the proper explanation. Among the rose-colored statistics are those of Culler, who treated 64 cases with hypnotism and claims to have cured 50 and bettered 10.

Genouville has made an interesting communication to the Association François d'Urologie on a simple device which he has used with considerable success in certain cases. It probably acts as a sort of suggestion without words. He states that the idea of the apparatus is not original with him, but he has forgotten where he saw the mention of it. It consists of placing in the bed of the child under the region of the pelvis two metal plaques separated by a piece of flannel or a piece of absorbent cotton. These two metal plaques are connected with wires, each to one pole of a battery and a bell. When the infant urinates the cotton becomes wet, completes the circuit and causes the bell to ring. The infant is awakened and the micturition is stopped, and after being thus awakened several times, the patient is frequently cured. This has only been tried in a comparatively few cases by the inventor. A remarkable thing in connection with it is that most of the cases that were cured were cured very promptly. A modification of the device consists in having the apparatus arranged to give a slight electric shock on the abdomen of the child.

The use of the injection of salt solution has also been suggested. Cathelin has suggested making the injection directly into the spinal canal by means of lumbar puncture, or, in other instances, subcutaneously in the sacral region. Jaboulay has suggested retrorectal injections of 100 to 150 grammes of salt solution, and Cahier has suggested subcutaneously injections into the

perineum. He used between 60 and 70 grammes, making the injections 1 or 2 centimeters on either side of the median line. He claims to have had especially good results in the treatment of the adult cases.

Lozano and Forès have used the epidural method with success, injecting the solution into the spinal canal, making the injections low down in the sacral region toward the bottom of the canal. Whether the results obtained by these injection methods are to be attributed purely to the mental effect, or whether they act reflexly, one cannot say. In refractory cases this method might be tried.

Of the old-fashioned means of treating this disease there are one or two things which may be mentioned. The first is to place the child upon a simple non-irritating diet and to restrict the amount of fluid taken, particularly the amount of fluid taken after four or five in the afternoon. Secondly, in some cases raising the foot of the bed so that the irritable neck of the bladder is not quickly affected by the first urine which enters the bladder. Certain cases are improved by a large amount of rest and leading a quiet life. General reflex irritability may be caused by too strenuous a life, particularly long automobile rides and the like. The writer states he has seen on several occasions the simple directions to have the child stay in bed until it is ready to get up in the morning, and to lead a quiet life generally, result in cure.

In hospital practice a large proportion of the cases can be improved by a more or less dry diet and restriction of fluids. Where there is no other indication for treatment he has found the use of atropine to give better results in a greater number of cases than any other one thing in the suggestions made. To be of any service atropine must be given in full doses. In nocturnal cases a dose at five o'clock and at bedtime is all that is required. In cases occurring both during the day and night, the administration of the drug every three hours is to be advised. Ruhräh usually prescribes a solution containing 1 grain of atropine sulphate in 2 ounces of water.

Each drop of this represents approximately 1/1000 of a grain, and ordinarily about as many drops will be required at a dose as the child is years old; but this is not the proper method of ascertaining the dose. Starting with one or two drops, each dose should be increased one drop at a time until flushing of the face and neck occurs some twenty minutes after the administration of the drug. The dose should be diminished one drop, and this amount continued until the child has ceased urinating at night and for at least two weeks later, when the drug may be left off gradually, diminishing a drop at a time until one drop is reached, when it may be stopped.

## TREATMENT OF GONORRHEAL CON-JUNCTIVITIS IN THE ADULT.

Horsford and James, in the Lancet of January 13, 1912, write on this subject. They have observed, in common with most ophthalmic surgeons who have given attention to this subject, that gonorrheal conjunctivitis in the adult is in all cases after the age of thirty attended with most disastrous results to the eve. Not only is all useful vision in these unfortunate cases completely lost, but the damaged and shrunken globe not infrequently remains a distressing and unsightly object in the orbit. They believe that this untoward result is not only unnecessary but preventable if the patient is seen early and appropriately treated. The involvement of the cornea constitutes the great danger in this affection.

- 1. It may slough wholly from strangulation owing to the pressure of the brawny lids and the gelatinous chemotic swelling round its margin.
- 2. Its epithelium may be readily abraded and a site exposed for the ingress of the terrible gonococcus by even the gentle manipulations of a skilled attendant.
- 3. The digestive powers of the toxic products contained in the discharge have a most deleterious influence on the vitality of the structures of the cornea.
  - 4. To these must be added what we have

come to consider as the almost uniformly pernicious influence of the caustics and astringents applied in the early stages of the disease. The authors refer more particularly to silver nitrate, protargol, argyrol, and perchloride of mercury. These, by the reaction they cause, lead to greater constriction and chemosis, whilst they merely remove the superficial layers, leaving deeper structures of the conjunctiva untouched. Moreover, the removal of these applications is not only distressing and exhausting to the patient, but is attended with positive danger to the cornea. Further, this method of treatment is, even in favorable circumstances, a lengthy one, the conjunctiva being left in an irritable, and occasionally papillomatous, condition for many weeks, while recurring ulcerations of the cornea are much to be feared.

It has always appeared to be evident that this treatment would be justly condemned if adopted by any modern surgeon in urethral gonorrhea, and that it is essentially unscientific and unpractical. For some years Horsford and James have adopted the following method in dealing with these very serious cases, and with the most uniformly gratifying results. The early symptoms of this disease may be recognized, or at least strongly suspected, by the practiced eye even before a culture has been obtained, though this should never be omitted.

- 1. The patient should at once be placed in bed, and remain there until all danger is past.
- 2. A low diet should be prescribed, consisting of milk, barley-water, eggs, fish, toast and butter, weak tea, etc., for the first ten days. The bowels should be kept freely open with mercury and saline purges, and aspirin (gr. x thrice daily) and quinine bisulphate (gr. ij thrice daily) are probably the best internal remedies to administer in this disease.

With regard to the all-important question of local treatment, they have found that the constant use of the douche is the primary curative factor. It may be applied either by a mechanical apparatus fastened to the head or by the hands of a relay of properly instructed nurses. These should sit behind the patient's head and apply the unintermitting stream as the surgeon may direct from time to time. No cessation in the flow is to be permitted for a moment either day or night. The solution which they have found most satisfactory for this purpose is one of permanganate of potash, varying in the early stages from 1 in 15,000 to 1 in 20,000, and in the later stages a solution of boric acid, gr. viij and 3j, may replace this and is all that is necessary. The temperature should be from 85° to 90° F. in the can, where a thermometer is constantly present. They do not use any ointment either within the conjunctival sac or on the surrounding skin, as it tends to interfere with the proper application of the solution. When possible the patient should be encouraged to open his eyes slightly every ten minutes. No manipulation of the lids except by the surgeon should be permitted.

In the arrangement of the douche the can should be placed not higher than one foot above the patient's head. The end of the fine rubber tube leading from it should be either fixed by plaster or held at the naso-orbital margin, and the stream allowed to trickle constantly across the palpebral fissure, which it will be found that there is a tendency for it to do if properly adjusted. If a slight coating forms along the lashes it can be removed readily by a warm solution of sodii bicarbonatis, gr. x to water 3j, the lashes being gently stroked downward. For the first four days, provided that the sequelæ to which they refer later do not call for further examination, only the gentlest attempts should be made to expose and inspect the eye. After this time, as the swelling is in all probability subsiding, the cornea should be carefully examined for minute specks, and signs of iritis or hemorrhages into the anterior chamber should be looked for. The patient should be encouraged to open the lids himself, the surgeon merely assisting by the gentlest manipulation of the upper lid. It will be observed in the severer cases that the chemosis in itself tends to keep the lids apart, or at least prevents firm closure, and that the portion thus exposed and submitted to the stream of fluid includes that part of the cornea—i.e., the lower limbus—most susceptible to damage from the toxic inflammatory products.

If the disease is diagnosed in the first days and irrigation is at once adopted a surprising improvement will be seen in the course of the next four days, and the surgeon may be tempted to relax the continuous douche. Relapse is, however, much to be feared if the treatment is not continued for the next three or four days. It may be pointed out also that even in the neglected cases, where the patient is seen by a specialist at a dangerously late stage, eight days' continuous irrigation will be found sufficient to bring the case completely under control, provided the cornea is not affected when the surgeon is called in.

In regard to complications and sequelæ, a malignant form of the disease occurs in which the lids become almost black and show signs of venous stasis and even threatened gangrene. In this condition the outer canthus should be freely incised, and, if necessary, its edges sewn apart. There is no danger of orbital cellulitis ensuing if the continuous douche is persisted with. These cases are, however, rare if the disease has been early recognized and the irrigation treatment adopted.

If the douche is discontinued at too early a stage the authors find that corneal complications are apt to appear as gray spots at the limbus or in the center of the cornea. A renewal of the irrigation has led to rapid arrest of further trouble. Even if a definite ulcer appeared, which they have not seen under this method of treatment, the writers believe it wise to persevere with the douche and not resort more heroic measures of the cautery or the silver compounds. A slight vascularity of the upper corneal limbus should not excite apprehension. There is no tendency for ulceration to occur in this situation; it occurs in the center from devitalization, or at the lower part from contact of the secretion, or from exposure. They have not found it necessary to make radiating incisions into the chemosed tissue since adopting this method of treatment. The subsidence of the chemosis has mostly ceased, by painting the conjunctiva of the lower lid only with gr. ij ad 3j of silver nitrate, or the use of permanganate of zinc drops, gr. 1/8 ad 3j. The globe and upper lid should not be touched by these astringents. The eyeball is always tender on the slightest pressure during the first fortnight, and the eye is hypersensitive to light even through the lids. There is, however, but little true tendency to iritis at this stage under this treatment, but it is their practice to instil atropine solution every other day, gr. ij to water 3j, after the eighth day for the general comfort of the patient. They have not found as sequelæ after this method of treatment papillary roughness of the conjunctiva, obliteration of the fornices, etc. results by no means uncommon after the astringent and caustic methods of treatment usually adopted. Neither have they encountered such terrible results as orbital cellulitis, meningitis, etc.

It must be remembered that however well the eye may have recovered in certain cases. the patient may suffer at a later stage from rheumatic troubles affecting the periarticular tissues and serous membranes. These occur chiefly in the urethral cases at about the fourth week, when the patient is up and about, and scleritis may supervene at this period and ultimately cause staphylomata. They have, however, never met with this complication after the irrigation method. They point to the importance of carrying out suitable treatment for the urethral complications, to warm clothing and careful dieting, and the avoidance of anything which may expose the patient to cold and Abstention from alcohol and tobacco and a diet consisting chiefly of milk and farinaceous food are indicated until the patient has completely recovered.

In the early stage the patient will naturally suffer somewhat from insomnia, owing to the want of rest which this treatment involves, but this should not prevent the surgeon from persisting with the douche, the

issue being so vital. It is most important that the stream should trickle uninterruptedly and not fall by drops upon the eye, for it is then apt to produce a peculiar mental irritability. Veronal, gr. viij, in tea can be given at night, but a fair amount of rest is really obtained. The light of the room should be subdued, and the sound eye protected by a Buller's shield well aerated above and below, which should not be removed unless absolutely necessary. nurses should wear protecting gloves of india-rubber. All swabs should be destroyed by burning. The fluid is collected by means of towels and mackintoshes, the towels being boiled, dried at the room fire, and used again. The room should be well aired and kept at a temperature of 65° F. The risk of infection to the attendants should be pointed out.

With regard to vaccine therapy the writers have not satisfied themselves of its accuracy, but believe that the use of antistreptococcic serum by the rectum is of service in the rheumatic complications which may arise.

### THE TREATMENT OF ECZEMA RUB-RUM OF THE LOWER EX-TREMITIES.

BECHET writing in the New York Medical Record of March 16, 1912, asserts that the most important single factor in the local treatment of eczema rubrum of the legs is undoubtedly the solid rubber bandage, as introduced and advocated by Dr. L. Duncan Bulkley. Bechet asserts he has observed truly splendid results achieved by its use, both in Bulkley's and his own practice and in his clinics. The bandage is made of very thin rubber, capable of a great degree of stretching. It is about three inches wide and about five yards long; should it be necessary to carry it to the thigh, a longer bandage is required. The method of applying the bandage is simple. No matter how small the area of eruption, it is best to apply it from the toes to the knee, overlapping it about one-third of its width. The bandage should never be reversed, the heel must be left free. With only a slight

amount of care, an even amount of pressure can be maintained and the comfort of the bandage elicited by having the patient stand and walk about. If at any time it proves uncomfortable it should be removed and readjusted. The bandage is not to be applied directly to the diseased parts. Bechet uses pieces of ordinary surgical lint, cut so that the borders just meet together, surrounding the leg with one thickness of cloth without overlapping. The woolly side of the lint is then covered thickly with the salve to be used and applied snugly to the diseased area. The rubber bandage is then applied. At night the bandage and dressings are removed, preferably after the patient is entirely ready for bed. The rubber bandage is washed in a diluted solution of phenol (one drachm to a pint) drawn through a dry towel, draped over the back of a chair, and left to dry over night. The leg, with the accumulated secretions of the day, should be washed off with some weak antiseptic solution, preferably phenol, because of its marked antipruritic properties. large piece of cotton should be used as a sponge. The leg is then gently dried with absorbent cotton, causing as little irritation as possible. An astringent cooling lotion is then applied, twice, at a fifteen-minute interval, in order to allow the first application time to dry before the second is put on. If during the night there should be any itching, a piece of cloth wet with the lotion should be applied. In the morning, before arising, the leg is dressed and the rubber bandage applied as previously described. Should any dressings be used during the night, and these are adherent, they should not be forcibly torn off, but should first be moistened with a little olive oil. If this is done they can be removed without force.

The advisability of using the rubber bandage in the very acute stages is questioned by some, yet Bechet has used it time and again in his clinic with nothing but good results. The exudation of serum is controlled in a remarkably short time. There is no difficulty in training patients to use the bandage rightly; with a little patience and several demonstrations, they will

carry out all details minutely. The benefit derived from the use of the bandage is a further incentive to obey instructions.

## THE PRINCIPLES OF TREATMENT IN EXOPHTHALMIC GOITRE.

The Lancet of February 24, 1912, contains an article by Murray on this topic. He thinks that in the present state of our knowledge the objects we have in view in the treatment of Graves's disease are either to remove the source of the autointoxication or to counteract its ill effects. The principles of treatment are therefore comparable to those which guide us in the treatment of a disease which is due to a local microbic infection, giving rise to a general toxemia, but more difficult to carry into practice.

In some cases we know that, either as the result of treatment or in the natural course of the disease, the hyperactivity of the thyroid gland gradually diminishes, the symptoms subside, and the patient recovers more or less completely. According to Murray's experience this may take any period from nine months up to' seven or more years, from the commencement of the disease. In some chronic cases a certain amount of tolerance gradually becomes established, so that the patient is hardly aware that the disease is still present. Recovery in these cases is the result of an involution of the enlarged gland, due to an atrophy of the redundant epithelium. This atrophy may be either primary in origin or secondary to the development of a gradual fibrosis of the gland, which may even proceed to partial or possible total destruction of the glandular epithelium, as in a case Murray reports having recently seen in which the symptoms of Graves's disease were replaced within a few months by those of myxedema. We are greatly in need of more exact information as to the conditions under which those involuntary changes take place. If we possessed this knowledge we should be in a better position to bring this natural process of cure into operation.

Murray briefly reviews the methods which may be adopted to reduce the morbid

activity of the thyroid gland to a normal level or to counteract its ill effects, reserving the consideration of surgical measures to the last.

General treatment by means of mental and bodily rest combined with a liberal diet, of which milk forms a large proportion, tends to diminish thyroidal activity. Excess of proteid food should be avoided. as Dr. Chalmers Watson's experiments show that the structure of the thyroid gland may be modified by diet. The work of Ehrlich and Wassermann opens up the possibility of efficient remedies being obtained in the future, which may have a direct and selective action on the hypertrophied gland. It is not unlikely that arsenic and belladonna, which are of proved utility, act in this way and tend to depress the activity of the secretory cells, just as iodine, on the other hand, exalts it and aggravates the symptoms. With the same object in view attempts have been made to prepare a specific cytolytic serum which would induce destructive changes in the epithelium of the gland without injury to cells in other parts of the body. Unfortunately such preparations are not really specific in action, and if used in adequate amounts they produce degenerative changes in other organs as well, and consequently may do more harm than good. X-rays have been employed in order to diminish the gland.

In one of Murray's cases which was under treatment at the Manchester Royal Infirmary, 11 doses of x-rays were given between November 28, 1911, and January 5, 1912, by Mr. A. E. Barclay. On January 9 the right lobe of the gland was removed because one night the patient had a severe attack of dyspnea with loss of consciousness for ten minutes. Microscopical examination of sections prepared by Dr. W. Mair from the portion removed shows there is a diffuse interalveolar fibrosis which, in places at any rate, appears to be of recent origin and to be the result of the action of the x-rays. At the time of the operation Mr. A. H. Burgess found the capsule of the gland was unusually adherent to the

trachea and surrounding parts. These adhesions were probably also a result of the use of the x-rays.

Although in this case no beneficial result was obtained by x-ray treatment, the microscopical changes suggest that a more prolonged course of treatment might in time bring about the desired result. The application of a mild faradic current to the goitre for two or three hours each day possibly acts directly on the activity of the gland, as in many cases it is a useful mode of treatment.

We may endeavor to counteract the illeffects produced by the excess of secretion in the blood stream. For this purpose the milk, dried blood, and blood serum of thyroidless animals, especially of sheep and goats, may be employed on the supposition that the products contain some substance which acts as an antidote and neutralizes the action of the excess of thyroid secretion in the blood. In many cases we have to resort to purely symptomatic treatment under special circumstances so as to deal with the special crises which arise from time to time in Graves's disease, when special measures may be applied to relieve cardiac, intestinal, bronchial, cutaneous, or nervous crises giving rise respectively to severe palpitation, diarrhea, bronchorrhea, sweating, and the like.

Finally, Murray briefly mentions some points in connection with surgical treatment. As the first object we have in view is to reduce the hyperacidity of the thyroid gland, it naturally occurred to many that this could be most successfully achieved by surgical methods. This view appealed rather strongly to Murray when the pathology of Graves's disease first became understood, but very quickly the hazardous nature of the proceeding became apparent. The first three of his cases in which one lobe of the thyroid gland was excised-in each case by a different surgeon-all died almost immediately after the operation. After this experience he was very reluctant for long to advise any patient to undergo operation, and consequently his personal experience of surgical treatment is limited.

Two methods of surgical treatment are chiefly employed at the present time-ligature of one or more of the thyroid arteries and partial thyroidectomy. On referring to the notes of 300 of the cases he has seen, 276 of which were women and 24 men, Murray finds that as far as he knows only 10 have been operated on. In one case both superior thyroid arteries were ligatured, and in nine partial thyroidectomy was performed. In the first three cases, which were all women, death occurred shortly after the operation. The other seven recovered from the operation, so that of the cases Murray has seen in which an operation was performed the mortality has been 30 per cent. Two of these seven were men and five were women.

In one man who had suffered for nine years from severe Graves's disease, both superior thyroid arteries were ligatured by Mr. R. Morison in June, 1907, under general anesthesia, four and a half years ago. Marked improvement has taken place, so that he can now cycle to and from his place of business and do an ordinary day's work, but he is not cured. In the second man, whom Murray saw in 1909 just before he started for Canada, partial thyroidectomy was performed by Mr. Roberts, of Toronto, in May, 1911, and when he saw him the following September he was quite well and completely cured of the Graves's disease.

Of the five cases in women, in one—that of a single woman, aged thirty-two, in whom there had been a goitre for twelve years, with more recent development of secondary Graves's disease—the right lobe was excised by Mr. W. G. Richardson in June, 1907, because she complained of so much pain in it and was anxious to have it removed. The only anesthetic used was chloroform given through the Harcourt inhaler. At the time the heart was considerably dilated and the pulse 144. She recovered, and her medical adviser informed Murray that she is now quite well.

In conclusion, Murray advocates operation in all cases in which there is distinct stridor from compression of the trachea or persistent pain in the goitre. In cases of a mild type he does not consider an operation is necessary. In very severe cases with marked cardiac failure the risk is too great. In a certain number of cases of moderate severity in which no adequate improvement has resulted from medical treatment fully tried for twelve months, a partial thyroidectomy or ligature of the superior thyroid arteries may be advised. The remarkably small mortality from the operation obtained by Sir Victor Horsley, Dr. T. P. Dunhill, Professor Kocher, and others clearly indicates that the grave dangers which formerly made physicians unwilling to advise operation have now been considerably reduced, so that operation can be recommended in a larger number of cases than previously appeared to be advisable.

The chief points upon which we hope to obtain further information by this discussion are the exact indications for operation, the average risk, and the results. In considering the latter and in comparing them with those obtained by other methods of treatment Murray emphasizes the fact that the prognosis usually given in text-books is too pessimistic, as a very considerable number of cases do either completely or partially recover without operation.

## THE PRESENT POSITION OF SAL-VARSAN.

The Lancet of March 2, 1912, gives the following editorial review of this subject:

On the first introduction of a new drug it is by no means easy to express a decided opinion as to its merits, especially when the disease for which it is employed is liable to reappear many months and years after apparently it has been cured. Of all diseases with which we are acquainted syphilis is probably the one about which it is most difficult to be certain that a permanent cure has been effected; for after intervals which may often be measured by years some manifestation may appear showing clearly that the virus has been latent in the body during the lengthy interval. Therefore when a new remedy is brought forward as more capable of effecting a complete and permanent cure of syphilis than was possible or at least easy by any other method. it is only natural that some of those who had many years' experience in the treatment of the disease should look askance at a remedy for which so great a claim was made; for by means of mercury judiciously, perseveringly, and thoroughly administered results of the very greatest value have been obtained. It is difficult to forsake a tried remedy for a new drug. Now sufficient time has elapsed since the introduction of salvarsan for us to form some idea as to its value and its risks; it is, however, not yet possible to make any dogmatic statement as to the position which the remedy will hold in the future-whether in, say, ten years' time it will be widely used or whether it will have lost much of its present popularity. That salvarsan has a great power against treponema pallidum is beyond dispute, but the occurrence of a number of fatal cases has shown that it is by no means free from danger; we are, perhaps, in a position to inquire whether these deaths are a necessary accompaniment of the administration of the drug, or whether they, or most of them, might have been avoided by greater attention to the method and details of administration.

It must not be forgotten that salvarsan was not a natural substance employed empirically, but a substance obtained as the result of a long series of experiments conducted on the most modern scientific lines. The problem which Ehrlich set himself was to find a substance which should prove inimical to the treponema, while at the same time it should damage to the least possible extent the normal tissues of the body. His object was to obtain a substance which could destroy completely all the organisms of the disease with one injection, and yet should not harm the host. Whether salvarsan is capable of effecting this cannot yet be said to be proved, but it is at least certain that it has a very great influence on the treponema and that the manifestations of the disease respond as a rule very readily to it. The amount of evidence both as to the merits and the risks of the drug is now voluminous, and a reference to the indexes of the *Lancet* for last year will show that it has devoted a large space to papers on this subject, and this has been done because it has felt the great importance of the matter. For a final judgment we must wait for some years, but it is at least possible at present from the materials in our possession to express an opinion on the value and risks of the drug.

All those who have had much experience in the use of salvarsan are agreed that it is capable of causing the rapid disappearance of syphilitic manifestations; it is true that some lesions seem to be more amenable to its influence than others, but in nearly all cases the action is rapid and effective. In fact, most observers are of the opinion that it is more rapid and more effective than is the action of its main competitor, mercury. It is true that there are some clinicians who decline to acknowledge that the efficacy of the drug is great, but they are comparatively few in number. The point of the controversy now is the question of the risk attendant on the use of the drug. At first the risk was said to be very small, but at that time it was employed by but a few surgeons, and it was administered with the greatest care, while since the use of salvarsan has spread widely it has been employed much more freely; and it must not be forgotten that the dose has been increased, while in many cases it has been thought necessary to administer a second dose.

That the drug can cause death is certain, and by now a large number of fatal cases have been published. In some of the earlier deaths the fatal results appeared to be due in part at least to the fact that the drug had been administered to patients who were almost moribund, but that explanation cannot be allowed in most of the more recent deaths. In the last issue of the Lancet a letter was published in which were collected together a large number of recently reported fatal cases after the injection of salvarsan, and the list is sufficient to make us consider with great care the risks of the drug. As to some of the cases it is possible to sug-

gest the cause of the fatal result. It appears that in two of the cases mentioned the full dose of 0.6 gramme was repeated after a very brief interval; in one case the interval was only three days, and in the other it Now it has not yet been was a week. shown that there is any anaphylaxis with salvarsan, but whether there be or not, it is, to say the least, very unwise to inject so large a quantity of the drug as 1.2 grammes within three days or even a week. It may be answered that it has been done with impunity, but such a dose is extremely large. and the fatal result is not strange. This is pointed out in the columns of the Lancet of this issue by Dr. G. S. Stopford-Taylor and Dr. R. W. Mackenna. It may be necessary to repeat the dose in some cases, but it is certainly advisable that an interval of greater length than a week should be allowed to elapse between the two injections. some of the fatal cases in which only a single dose had been given the symptoms had pointed to the presence of a meningitis, and they had arisen within a few days of the injection, and in others nephritis had occurred. These are evidently the direct effects of the drug.

It is of interest in such fatalities to know whether the solution was filtered before it was injected intravenously, for it is easy to see that minute solid particles of the drug might have a harmful effect that would not be produced by a solution. It is very desirable that in reports of cases in which severe symptoms or a fatal result have occurred the fullest particulars should be given of the mode of administration, especially as so many different methods are now employed. There is a further point that is worthy of consideration, and that is the relative frequency of fatalities. now the drug has probably been given in one way or another in more than 100,000 cases, but we have no evidence as to the proportion of fatal results, though a few surgeons have published the statistics of their own cases.

The present position of the matter is that salvarsan has been proved to be a powerful antisyphilitic agent, that in a large proportion of the cases in which it has been given it has produced no harmful symptoms, but that in a small number of cases severe symptoms have appeared, and in some cases a fatal result has followed. There is evidence to show that in some of these fatal cases at least the death has been due to the too early repetition of the dose, and in other cases probably some error in the mode of administration had been committed. It is clear that the drug has a very definite value, but it is equally clear that its administration needs the greatest care. It is not improbable that a certain amount of selection of cases will be necessary if the best results are to be obtained, but at present it is hardly possible to say what cases should be excluded from the treatment, though there is some reason to think that nephritis is a contraindication to the administration.

## PITUITRIN IN OBSTETRIC PRACTICE.

The Journal of the American Medical Association of May 18, 1912, quotes from an article on this subject in the Hospital-stidende of Copenhagen of April 3, 1912, entitled "Pituitrin som Ekbolikum:"

The therapeutic value of pituitrin is discussed by Hauch and Meyer on the basis of considerable personal experience as well as recent literature on the subject. did not observe any unfavorable by-effects except that there was a slight transient infiltration around the point of injection in one case. Two or the women and four of the children died in Meyer's thirty-six cases, but he states that these deaths have scarcely any connection with the injections, although there is a possibility in one case that the increase in the blood-pressure after the injection may have cooperated in bringing on the eclampsia, the first symptoms of which appeared an hour and a half after the injection. The woman was delivered at once, but died five hours later. She had kyphoscoliosis and nephritis.

The case warns us, however, to be cautious with a patient showing a tense pulse or any signs of impending eclampsia. The

extract seems to be generally effectual in inducing contractions of the uterus at term and expulsion of the fetus, and it may render forceps delivery unnecessary. Its action before term is uncertain. Hauch declares that the extract may permit a more active management of birth in some cases, while in others it will permit expectant treatment to be carried to greater lengths, knowing that we now have this effectual oxytocic to fall back on at need. He obtained such good results with it in four cases of partial placenta previa that he thinks it may prove of great assistance in such cases, as it aids in arresting the tendency to hemorrhage.

Brammer reports his experience with it in twelve cases, of which he gives the details. He says that when all goes well the obstetrician feels that his dreams are being realized, but that the action of the extract is irregular, and it may induce such violent contractions as to endanger the fetus. Nausea and vomiting were observed in one case five hours after the injection. contractions may become so violent that a little chloroform may be needed. and other reasons confirm the necessity of the physician remaining with the patient for at least an hour afterward. The only contraindications seem to be an abnormally high blood-pressure from arteriosclerosis or nephritis, and possibly a tendency to nervousness or hysteria, as these may magnify the influence on the uterus and lead to too violent contractions.

## THE USE OF INTESTINAL ANTISEPTICS IN CHILDHOOD.

HAND writing in the Archives of Pediatrics for February, 1912, states that it is still a debatable question whether bacteria normally present in the intestinal tract can, under certain conditions, give rise to inflammation, or whether all cases of enteritis do not belong to the ectogenous group of Escherich, the germs being introduced from without. Three main groups of pathogenic germs have been described in the great disorder of infancy and early childhood, ileo-

colitis—the streptococcus of Escherich, the colon bacillus, and the dysentery bacillus of Shiga-Kruse and Flexner. The colon bacillus is, of course, a normal inhabitant of the intestinal tract, but bacteriologists claim that the one normally present in any given case is of a different strain from the one causing trouble, the latter probably having been introduced from without, so that as the pathogenic one is overcome the normal one returns. The separation of these cases of ileocolitis bacteriologically is only possible through the services of a skilled bacteriologist and a well-equipped laboratory. Clinically, such distinction cannot be made. and for purposes of treatment such distinction is not necessary, as the same fundamental principles underlie all the groups.

The writer says we must consider the patient first of all and do him no harm, while we have the absolutely necessary aim of ridding the intestine of the invading, hostile germs. It is always better to keep the peace than to fight for it, so Hand digresses for a moment to mention the prevention of enteritis by avoiding the introduction of these disease germs; and as most of them gain entrance in the company of milk. clean milk is a necessity. But as we cannot tell when human fallibility will break into the most carefully guarded plan of milk production, distribution, and consumption, it is always safer, for at least nine months of the year in this climate, to pasteurize the milk taken by infants and children. When, in spite of the best of care, the intestinal tract is invaded by diseaseproducing germs, the first symptom of any trouble is an indication to sweep the invading army out at once before it can effect a foothold; and the initial dose of castor oil, salts, or calomel acts mainly as a dislodger rather than a disinfectant. Unfortunately, the few golden moments when this is possible too often slip by with nothing done, and the germs become securely entrenched in the intestinal mucosa. It has been established by clinical observation that putrefaction favors the action of these germs, and we therefore have a fundamental principle of treatment in the with-

drawal of milk and all foods which must be ultimately broken down by putrefaction. Milk and all milk foods, such as condensed milk, whey, or any of the dried malted milks, must be absolutely forbidden until the discharges have lost all evidences of blood and greenish mucus. All remains of milk in the alimentary tract must also be removed by purgation, as mentioned above, colonic irrigation being also valuable. Just as in human warfare hunger is a potent ally in reducing to submission a beleaguered city, so in ileocolitis the battle is half won if we prevent the disease germs from receiving means for their sustenance; for if milk is withheld for twenty-four hours or longer if necessary (and it usually is) most of the germs will probably die, this being a disinfecting measure of great power.

The patient is now in the stage when the use of intestinal antiseptics (or disinfectants) may be considered. Is it possible to hasten the death of the germs by the use of drugs? Hand believes that it is, but here we have a two-edged sword that must be used cautiously. Some of the intestinal antiseptics are theoretically powerful, but are too irritating to the mucosa to be used in a dose large enough to have any value. He looks on thymol, the naphthol derivatives, and phenyl salicylate, or salol, as in this class. Bismuth salicylate he has found objectionable from this point of view, and a comparison of two series of cases, one treated solely by the starvation plan and one treated with bismuth salicylate, showed such a decided difference in favor of the drug that it seemed to have undoubted disinfectant properties, which Steele's careful investigations proved mathematically. Besides the direct disinfectant action of the salicylic radical there is also obtained the sedative action of bismuth itself, which may also be enhanced by giving the subnitrate or the subcarbonate at the same time. sedative property may also be said to have an indirect disinfectant action, such as may be attributed to decoctions of the carbohydrates, like barley-water or rice-water. As already stated, these favor fermentation by the saccharolytic germs, which seem

clinically to aid in shortening the inflammatory period so positively as to possess antagonistic action on the pathogenic germs.

Hand sounds one word of warning as to the use of calomel in these cases. He uses it rarely because of its possibilities for harm, and the more he sees of its use by his colleagues, he asserts, the more disinclined he is to use it. Certainly the sickest infants he saw last summer with enteritis had had in the preceding twenty-four hours a grain of calomel in divided doses. In much smaller doses, one-twenty-fourth of a grain every three hours for four or five doses, it may be of service, but it is a much slower evacuant than oil, rhubarb, or magnesia (the citrate or sulphate). And if its antiseptic action depends on its conversion into the bichloride, then, as Dr. Wood has pointed out, to have any value it must be present in such amount as would seem to be irritant if not positively toxic.

## THE CAUSES AND TREATMENT OF HIGH BLOOD-PRESSURE.

Under this title BAIN in the Proceedings of the Royal Society of Medicine for February, 1912, tells us that in treating cases of high blood-pressure he generally adopts the following plan: If the systolic pressure is about 200 he usually prescribes nitroglycerin or erythrol tetranitrate for a few days, puts the patient on a restricted protein diet, advises strong sulphur water daily, and gives him one of the following baths: Aix douche (without abdominal massage or needle douche), Nauheim, liver packs, modified Turkish, electric light bath, D'Arsonval, or a strong sulphur bath. Massage of the back and extremities is helpful, and a moderate amount of outdoor exercise very desirable. The reason why in starting treatment he frequently gives nitrites is because there is generally an initial rise of pressure attending bathing operations, either from apprehension or heat, which might prove dangerous. There are certain patients who cannot take nitrites on account of the splitting headaches they produce. When the nitrites disagree he uses hippurate of ammonia, puts the patient on a vegetable diet, and delays bathing for a week. The sulphur water clears out the alimentary tract daily, and is an intestinal disinfectant. Unquestionably the most important part of the treatment is restriction of the diet on the lines indicated. It is necessary to impress upon the patients that they must adhere strictly to the diet sketched out for them until their bloodpressure comes down to normal. A vegetable and fruit diet can be made fairly palatable.

While most practitioners recommend Aix douches as agents for lowering bloodpressure, Bain asserts he has not seen liver packs suggested for this purpose. Yet in certain cases in which the hepatic dulness was slightly increased the packs have had a distinctly beneficial effect. This leads him to the statement that each case should be treated on its merits. Nauheim baths. like the Aix douche, facilitate the peripheral circulation, thereby relieving the embarrassed ventricle, and this effect is secured with a lower temperature than in most other baths. What is meant by a modified Turkish bath is that the patient alternately sits in the Russian room and the first hot room, spending a couple of minutes at a time in the former and ten minutes in the latter. Consequently he is not subjected to a higher temperature than 130° F.

Many practitioners condemn the use of alcohol and tobacco in cases of high blood-pressure. It is a hardship to be deprived of nearly everything that makes life worth living. Providing patients carry out dietetic instructions, Bain believes, if they desire it, they might be allowed to enjoy alcohol and the fragrant weed occasionally.

In the earlier stages of arteriosclerosis he believes the iodides have a beneficial effect in promoting the absorption of effused material, and in relieving spasm of the smaller vessels, but it is a difficult matter to decide when the arterioles are beginning to become hypertrophied. It is wiser to err on the safe side and give iodides when there is the least suspicion of a pathological change in these vessels. It

must be remembered that in administering the iodides we are not attempting to remove the cause of the high blood-pressure. We are merely treating a consequential sequela of hypertension. The iodides do not promote the excretion of the toxic products which produce the vascular changes. When such a drug is discovered the treatment of high blood-pressure will be simplified.

# HOW TO USE QUININE AND UREA HYDROCHLORIDE; ESPECIALLY FOR SYSTEMIC EFFECT BY INJECTION IN MALARIA AND PNEUMONIA.

COHEN in the Medical Times for March. 1912, reminds us that quinine and urea hydrochloride—long known in Germany as chininum bimuriaticum carbamidatum, and used with confidence by some American physicians, most of whom learned of it a generation ago from Professor Roberts Bartholow, or more recently from his pupils—has within a few years come into prominence as a local anesthetic. Of its use as such. Cohen does not discuss, except to call attention to its great value in acute tonsillitis and in tuberculosis of the larvnx. A solution of 1:10 or less is usually strong enough, but even a 20- to 50-per-cent solution may be employed if necessary. It can be applied by spray, sponge, brush, cotton applicator, etc., as may be most feasible in the individual instance. Sometimes the patient may simply take a teaspoonful or two of the solution in his mouth, and holding it back toward the painful region of the tonsils or epiglottis, move it gently to and fro by action of the pharyngeal muscles. This is somewhat easier than gargling, and gives more relief. Done ten minutes before the taking of food, it will sometimes permit nourishment to be given in cases of ulceration of the epiglottis or other painful tuberculous lesion in which all other methods of relief have proved unavailing.

Neither in tuberculosis nor in tonsillitis need the patient be apprehensive of any danger from swallowing the solution, as a dose of 5 grains or so, three times a day, would not ordinarily be hurtful, and in febrile cases might be beneficial. Sometimes, indeed, the specific direction to swallow a part of the solution—or even all of it —is given.

It is, however, more particularly with the systemic effect of the drug, and its administration in malaria and in pneumonia, that this note deals. Cohen has received many inquiries concerning particular details of the method of administration employed by him in the treatment of acute lobar pneumonia and acute lobular pneumonia by massive doses of quinine and urea hydrochloride—the favorable influence of which he reported some months ago to the Association of American Physicians (American Journal of the Medical Sciences, January, 1912)—and this is the easiest method of answering at once all his correspondents.

The drug may, of course, be given by the mouth in solution, powder, or capsule, as any other salt of the cinchona alkaloid. It is probably more active, grain for grain, than any other quinine preparation. Possibly the urea is a linking body; possibly it is merely a question of solubility. Cohen asserts he does not know the explanation, but the fact is evident.

The peculiar advantage of the urea compound over the other quinine salts, however, is its availability for hypodermic and intramuscular injections; possibly for intravenous injection also, although he has never found the latter method necessary, and thus has no experience to report. A possible danger is injury to the vessel wall.

The superiority of the carbamide for injections is owing to its high solubility. It will dissolve in its own weight of water, especially hot water, and an ordinary syringeful may thus contain from 15 to 18 grains (1 to 1.2 gm.) if necessary. The preferable solution is 50 per cent, and the ordinary dose is 1 gm. (15 grains) in 2 Cc. of water.

In malaria of the types ordinarily seen in northern latitudes, a single injection of this strength will cause suspension of the paroxysms for from a week to a fortnight (6½ to 13½ days). One injection daily for a week suffices to bring about complete re-

covery in the ordinary case. After this, to make sure against chronic infection or sequels, the drug should be continued in doses of 10 grains, in capsule by the mouth, daily, for another week; and then administered once a week, in the same way, for two or three months.

## NITROUS OXIDE-OXYGEN ANES-THESIA.

The Journal of the Michigan State Medical Society for March, 1912, contains an article by SMITH and MAURITZ on this subiect. They state that nitrous oxide-oxygen, after several years' trial in a number of surgical clinics in this country, has been adopted as an advantageous form of anesthesia. In no instance of which they are aware has it entirely replaced ether and chloroform; nor, on the other hand, has it often been given up after a fair trial, though the indications for its use seem to vary considerably with different men. That it is still used, after mature consideration, by a number of our best surgeons would seem to indicate that it possesses real advantages. We may also assume that it has certain disadvantages that in critical minds have led to the adoption of a number of re-

The object of this paper is to present the results of their experience in the 410 cases (132 of which were laparotomies) in which it has been employed; to give their statistics, impressions, and methods; and to suggest its trial to those who can obtain a proper person to administer it. They believe that the expert anesthetist is really the key to the situation, and that surgeons who are dependent on inexperienced, uninterested men had better wait until such can be obtained. Close study and experience are necessary to obtain satisfaction. Had they been governed by the result of their first ten or twenty cases, they would have discontinued its use. They assert they were made uneasy by the cyanosis and occasional check in respiration and annoyed by the rigidity and struggling. With further use and with better ideas as to what patients should or should not receive it, it

has grown in favor with the authors, and at present they are employing it in something over half of their operations. They have, they believe, fully recognized the disadvantages noted by others. After all, the only one worthy of serious consideration is the rigidity which may so embarrass the surgeon as to more than offset the advantages of lessened toxic effects, nausea, depression, and discomfort. The cost of the gas is of no great moment. In 388 cases it has averaged \$3.40 per hour—surely but very little when we consider the total cost of operative work. Excessive bleeding has been spoken of by others; the authors have had no trouble on this account.

The still rather prevalent idea that the anesthetic is adapted only for short operations is, of course, without foundation, and probably arises from the use of nitrous oxide by dentists for teeth extraction. The oxygen in addition gives us a very different agent. In one case they used it for three hours, and Dr. Mauritz, in another, administered it for three hours and thirty minutes. One and a half to two hours in difficult surgical cases is a common occurrence with them. They have used it for long and short operations, since in the latter the bad effects of ether are not so great.

## ATROPINE AND OPEN ETHER ADMINISTRATION.

GARDNER in the British Medical Journal of February 24, 1912, gives the following advice as to the technique:

1. One hour before the administration of ether a hypodermic injection of atropine sulphate 1-150 grain is given with the object of preventing the considerable secretion of mucus in the air-passages which may be otherwise caused by ether. This also prevents sweating during the operation, and thereby retains the body heat. Atropine is also a respiratory stimulant and a vagal obtundent, both valuable qualities unhampered by contraindications. Morphine is not advantageous for routine employment, because it appears to induce oozing of blood from the wound during

operation, and certainly retards the reappearance of the laryngeal reflex and the resumption of consciousness during recovery.

- 2. When the patient is in position for the ether administration a small mouth-prop is inserted between the side teeth and held in position by light pressure upward upon the lower jaw with the administrator's left hand.
- 3. A ring pad made of gauze is then rested on the patient's face encircling the nose and mouth.
- 4. The wire mask, fitted with a pad made of sixteen layers of gauze, is now laid upon the ring pad, and the patient instructed to breathe in and out slowly through the mouth.
- 5. The administrator now talks quietly to the patient all the time, while he drops ether continuously upon the mask until unconsciousness supervenes.
- 6. The mouth is then opened wider with a jaw gag, a tongue clip with finger loop is inserted, and the tongue drawn slightly forward away from the pharynx.

The mouth-prop is then readjusted, leaving the mouth partly open as at first. The ring pad and mask are then replaced and the ether drops continued.

By means of this procedure all further anxiety as to the patency of the airways is removed, and labored respiration entirely avoided.

The practical advantages may be shortly summed up under the following headings:

- 1. A smooth induction period of six to eight minutes.
- 2. Very early clouding of the mental faculties.
- 3. Tranquil regular respiration with abdominal relaxation.
  - 4. Absence of mucus in the air-passages.
- 5. No unusual oozing of blood from the wound.
- 6. Extraordinary safety, alterations in the patient's position or disturbances of vital structures producing barely any depression.
- 7. Maintenance of normal blood-pressure and absence of shock owing to the obtundent effects of both atropine and ether.

- 8. Suitability for goitre operations and adenoids and tonsil extirpation.
- 9. The patient may be safely propped upright on pillows on return to bed.
- 10. No after-effects, vomiting being quite rare.
  - 11. Acidosis improbable.
- 12. Unusual value therefore in septic conditions and those with flagging circulation.

After four years' employment of open ether administration, in contrast with thirteen years' previous use of other methods, Gardner cannot refrain from strongly urging its general acceptance as a substitute for chloroform and mixtures in all routine surgical work on account of its extreme simplicity, safety, and convenience for the operator, administrator, and patient.

### TOXEMIA OF PREGNANCY.

BLACKMAN tells us in the New Orleans Medical and Surgical Journal for March, 1912, that nearly all the symptoms incident to pregnancy from simple morning sickness to pernicious vomiting, and eclampsia, are only varying degrees of toxemia.

This toxemia is due to suboxidation or unoxidized substances, principally of the nitrogenous derivatives, in the circulation.

Urea and uric acid are harmless end products which can be eliminated as such without trouble, but it is only when the nitrogenous particle is incompletely oxidized, leaving bodies such as xanthin, hypoxanthin, ammonia, creatin, etc., that toxemia begins.

Both the urinary and autopsy findings show that the toxemia of pregnancy is the same condition as autointoxication of the non-pregnant individual.

The pregnant woman is more prone to this autotoxemia because of the increased catabolic activity, more sedentary habits, and because of the increased demands for oxidation on account of the fetus.

Oxidation is brought about, governed and controlled by the adrenal system, and the thyroid secretes a fluid which stimulates the adrenal activity, thereby increasing oxidation, as witness the physiological enlargement of the thyroid, in normal pregnancies, to meet the demands made on it for increased oxidation, and, as shown by Charles Mayo, when this enlargement does not occur the woman is in danger of eclampsia.

"The internal secretion of the adrenal is the constituent of the hemoglobin molecule, which carries oxygen to the tissues," and in cases of suboxidation or adrenal insufficiency, any amelioration of the condition and a cessation of symptoms, or an increased adrenal activity, can be and is brought about by administering thyroid extract.

Veratrum viride is the very best remedy we have in eclampsia for lessening the irritability of the vasomotor center, lowering vascular tension, and relieving the attack. Chloroform is not safe on account of its liability to produce degenerative changes in the liver, and morphine is only an artificial remedy, which should never be used when there is any kidney disease or diuresis is not free. Chloral and the bromides, when used in large doses to control convulsions, act similarly to, but are not as desirable as, veratrum.

Combined with the above, elimination and lessened proteid ingesta are the only rational methods of combating this toxemia.

Physiological saline solution, preceded by venesection in suitable cases, is one of the safest as well as the surest means of preventing eclampsia during the pre-eclamptic period, as well as controlling and relieving the seizure.

It is the duty of the physician, in every case of pregnancy in which he expects to act as accoucheur, to inform the patient of some of the dangers incident to pregnancy; to give her full and minute instructions in regard to her diet, exercise, elimination, etc.; also to examine a 24-hour specimen of urine every four weeks during the first six months, and every two weeks after that, not only for albumin, but more especially for the total nitrogen, amount of urea, casts, etc., and when evidence is found that elimination is substandard, to put the patient on

an absolute milk diet, plenty of water, and administer thyroid extract to increase the adrenal activity and oxidation.

Without going into a lot of case histories, which are usually tedious and tiresome, and would prolong the paper too much, suffice it to say that for two years he has used thyroid extract with the elimination measures outlined, in all degrees of toxemia or adrenal insufficiency, with the most happy results, proving its worth to his own satisfaction beyond the shadow of a doubt.

# THE ADVANTAGES OF SINGLE OVER MULTIPLE DOSES OF ANTITOXIN, AND OF INTRAVENOUS OVER SUBCUTANEOUS OR INTRAMUSCULAR INJECTIONS.

In the Journal of Pharmacology and Experimental Therapeutics for March, 1912, PARK gives the following summary as to this matter:

Different investigators have tested the rapidity of absorption of antitoxins from the tissues and drawn attention to the superiority of intravenous injections. Notwithstanding their reports subcutaneous injections are still generally employed in the treatment of both diphtheria and tetanus. He decided to repeat the experiments of others and add new ones.

A series of rabbits and of goats were injected with 10,000 units of diphtheria antitoxin and bled at intervals for ninety-six hours. A number of persons suffering from diphtheria were examined as to the antitoxin content of the blood during the same period of time. The following two tables give one example of each method of injection in goats and one for each in human beings suffering from diphtheria.

The great advantage of the intravenous injections is manifest.

The Comparative Value of Single and Multiple Doses.—The question of giving the total amount believed to be necessary in a single injection, or dividing it into two or three injections to be given at intervals of six to twelve or more hours, is an important one. The slow absorption of the antitoxin from the tissues would seem to

make the single injection by far the better method. The table shows the antitoxic strength of the blood in the two methods.

It can be seen that the single dose gives much greater antitoxin content for the first three days.

A large series of cases treated by the different methods has shown that the intravenous injections can be safely given. In all cases of tetanus and in severe cases of diphtheria intravenous injections are indicated.

(1) ANTITOXIN CONTENT OF BLOOD IN GOATS INJECTED.

(Each received 5000 units.)

Method of Injection.	Units in 1 Cc. at different intervals of time.							
	8 h.	6 h.	12 h.	24 h.	48 h.	72 h.	96 h.	
		8.5 0.5 1.8		2.6 2.5 2.8	2.4 2.9 2.8	2.0 3.0 2.6	1.8 2.9 2.4	

Weight of goats about 25 pounds each.

## (2) Antitoxin Content of Blood in Three Adult Diphtheria Patients.

(Each received 10,000 units.)

Method of Injection.	Units in 1 Cc. at different intervals of time.							
	8 h.	6 h.	12 h.	24 h.	48 h.	72 h.	96 h,	
Intravenous (1) Subcutaneous (2) Intramuscular (8)	8.0 0.1 0.2	2.7 0.2 0.85	2.4 0.25	2.0 0.4 0.6	1.5 0.55 0.6	1.0 0.65 0.59	0.8 0.7 0.55	

Weight of number 1 about 100 pounds; of number 2 about 110 pounds; of number 3 about 120 pounds.

	UNITS IN BLOOD AT					
	12 h.	24 h.	48 h.	72 h.		
Single dose.	0.25	0.4	0.55	0.65		
Dose divided into three given at 12-hour intervals.	0.08	0.2	0.48	0.62		

## THE TOXICITY OF CAFFEINE.

SALANT and REIGER in the Journal of Pharmacology and Experimental Therapeutics for March, 1912, tell us that the toxicity of caffeine in the rabbit varies with the mode of its administration, being least when given by the mouth and greatest by intravenous administration. The toxicity is about from 15 to 20 per cent greater by subcutaneous injection than by mouth, but is about half of this when injected into the peritoneal cavity. No differ-

ence was observed in the toxicity of caffeine whether administered into gluteal or into the lumbar muscles. When introduced by this route the toxicity was found to be less by one-third than when it is injected into the peritoneal cavity, but is about 30 per cent more toxic than the subcutaneous injection. White or black rabbits were found to be less resistant to caffeine than gray rabbits. The resistance of the guineapig to caffeine, as in the rabbit, is greatest when given by mouth. The minimum fatal dose is less by intraperitoneal injection, but greater than by subcutaneous injection, thus differing from the rabbit in this regard. Cats are less resistant to caffeine than guinea-pigs or rabbits. The minimum lethal dose by mouth in the cat is the same as by subcutaneous injection, but is less when given by the intraperitoneal route. The toxicity of caffeine for white mice varies according to season, being twice as toxic in the early fall as in the spring, when resistance to caffeine is about the same as that of the guinea-pig. But its resistance to caffeine in the fall was less than that of animals of other species employed in the present research. The tolerance of the white rat for caffeine is about the same as that of the pigeon. No effect of season was noticed. The toxicity was the same whether caffeine was introduced into the peritoneal cavity or into the subcutaneous tissues. The minimum fatal dose for dogs was found to be the same by mouth as by subcutaneous injection, and is almost the same as for the cat. The resistance of the pigeon to caffeine is very much the same as that of the herbivora, but it approaches more nearly the guinea-pig than the rabbit in this regard. The toxicity varies much more in different individuals when given by mouth than when injected subcutaneously. The toxicity of caffeine varies in the guinea-pig according to season, and this seems to be the case also in mice.

Age is likewise a factor in the toxicity of caffeine, young animals being more resistant than the full-grown and older animals. This was shown in experiments on rabbits, cats, and dogs. The symptoms of caffeine poisoning were also different in puppies and full-grown dogs. Diet such as carrots and oats did not influence the resistance of rabbits and guinea-pigs to caffeine. Low protein diet tends to decrease resistance to caffeine in dogs. Young growing dogs are less resistant to caffeine on a meat than on a milk diet.

Caffeine is not cumulative in the rabbit or dog, even if administered for a considerable length of time. A mild tolerance may be induced in the rabbit under certain conditions, but not in dogs under the condition of the experiments made in this investiga-The possibility, however, that dogs may acquire tolerance for caffeine is not excluded. Although the rabbit tolerates a much larger single dose of caffeine than the dog, it was found, in experiments on chronic caffeine intoxication, that the rabbit is less resistant to caffeine than the dog. The toxicity of caffeine is increased under some pathological conditions, since comparatively smaller doses proved to be fatal to rabbits, cats, and dogs, when marked lesions not due to caffeine were found at autopsy. Glycosuria was observed in rabbits, guinea-pigs, and cats when caffeine was given in sufficient amounts.

#### CHRONIC CHLORAL POISONING.

Wallace in the Journal of Pharmacology and Experimental Therapeutics for March, 1912, describes experiments in which gradually increasing doses of chloral were given daily by the stomach to dogs. As chloral is changed in the body to trichlorethylalcohol, and this unites with glycuronic acid, forming the inert urochloralic acid, it was thought that the formation of this combination would keep pace with the increasing amount of chloral given, and by means of this protective agency a tolerance be established. The results of the experiments may be summarized as follows:

1. The earlier doses of chloral produce vomiting, but later the stomach becomes tolerant to the drug and vomiting does not occur. This local tolerance is common to gastric irritants. When large doses, 5

grammes or more, are given daily, a gradually increasing looseness of the bowels results, which eventuates in a diarrhea. The chloral given, however, is absorbed.

- 2. As far as symptoms of depression of the nervous system are concerned, only a slight degree of tolerance is obtained. After doses sufficient to induce narcosis are reached, the gradual increase in dosage still brings about complete narcosis, but its duration becomes less. The tolerance of the nervous system is not marked therefore, and is comparable to that from alcohol.
- 3. As the dose is increased no change in metabolism, as measured by total nitrogen and urea, is seen, and the animal maintains a fairly constant weight. After daily doses of 5 grammes or more the ammonia rises, however, and may reach twice the normal figure. The urine gives no qualitative reactions for acetone, or diacetic or oxybutyric acid. Albuminuria finally appears. The urine contains no sugar.
- 4. The chloral excretion takes place through the kidney and was calculated quantitatively by the amount of organic chloride in the urine. The exact forms in which it is excreted—i.e., the relative amount of free chloral, trichlorethylalcohol, etc.—have not yet been determined. Calculated as chloral from the organic chlorides eliminated, with small doses from 70 to 85 per cent of the chloral ingested is excreted within eighteen hours. As the dose incerases this percentage increases slightly. A breaking up of the chloral molecule, therefore, does not occur.
- 5. The glycuronic acid excretion as determined by the method of Tollens runs fairly parallel to that of the chloral. Thus after a dose of 2 grammes chloral, 1.73 grammes chloral and 1.35 grammes glycuronic acid were excreted. After 8 grammes chloral, 7.21 grammes chloral and 6.21 grammes glycuronic acid were excreted. With the smaller dose, therefore, 0.75 gramme chloral and with the larger 2.6 grammes chloral were not paired with glycuronic acid.

It may be said in conclusion that although the change of chloral to trichlorethylalcohol and the pairing of this with glycuronic acid is of the nature of a protective mechanism, it cannot in itself bring about any marked tolerance for the drug, but rather is analogous to the power of the body cells to destroy morphine in cases of morphine tolerance.

## PHYSOSTIGMINE WITH MORPHINE IN THE TREATMENT OF PAIN FOL-LOWING ABDOMINAL OPERATIONS.

SCHENCK commends this plan of treatment in the Journal of the Michigan State Medical Society for March, 1912. He says that concerning most of the points in the treatment of patients who have undergone an abdominal operation, there is, at the present time, a very considerable unanimity of opinion. Such is not the case, however, concerning the administration of analgesics. One finds in the different clinics and in the work of different surgeons marked variations in the treatment of abdominal pain, from which, in some degree, practically all patients suffer.

There can, of course, be no denial of the statement that no drug is as efficacious as morphine for the relief of pain, yet the extent to which it is used following laparotomy differs widely. On the one hand there are surgeons who never employ opium; on the other, those who administer it, almost if not entirely, ad libitum. Probably the majority use the drug sparingly, relying on two or at most three doses during the first twenty-four hours, later substituting codeine or heroin.

Were it not for the fact that morphine inhibits peristalsis and thus predisposes to meteorism, and to the additional fact that nausea and vomiting are prolonged when the drug is freely given, it would be universally used in sufficient quantities to insure comfort to the patient. Could we combine with the morphine some drug which would completely antagonize the paralytic effect on the intestine, an ideal analgesic would result. Schenck believes that we have, to some extent, such a drug in the active principle of calabar bean, namely,

physostigmine or eserine. That physostigmine completely fulfils the condition is probably not true, but he feels quite sure that combining physostigmine with morphine lessens to a considerable degree the objectionable effects of morphine when used alone.

The hypodermic administration of eserine for its effect on the intestinal wall is, of course, not new. Von Noorden, in 1901, seems to have been the first to recommend it for this purpose. Mozskowicz, Arndt, and Maragliano were among the first to use the drug in the treatment of postoperative intestinal paralysis, and its trial in cases of meteorism has become quite general. Its value, once distention has occurred, is questionable, even in proper cases. It is not only valueless, but positively harmful in those instances of ileus due to peritonitis or to mechanical causes.

In 1904 appeared an article by Vogel of Bonn, in which he stated that for three years he had been using eserine as a prophylactic for postoperative distention. He employed doses of 0.005 gramme, three or four times during the first day, giving the initial dose before the patient left the operating table. In this country Craig of Boston has given this prophylactic use most careful trial, and his three articles on the subject are both thorough and enthusiastic. Elsberg, in 1906, and Vineberg in the same year, began its prophylactic use at the Mt. Sinai Hospital, and the latter reported favorably for both.

Since then physostigmine has been used quite extensively, more, however, after the distention has occurred than as a routine prophylactic. Judging from the literature and from conversations with those who have tried the drug to relieve meteorism, Schenck states that thus used it has not found very great favor.

It seems to be well established, theoretically, at least, that eserine in therapeutic doses produces a stimulating effect on the intestinal musculature. This it probably does in two ways: (1) by depressing the spinal reflex, thus lessening the splanchnic inhibition, and (2) by its selective action on

the muscle of the intestine, similar to its action on the ciliary muscle of the eye. Whether this action on the intestine is directly on the muscle fiber or on the nerve terminals is not known and, as Craig says, does not affect our purpose. Medicinal doses affect the circulatory system but little, causing if anything a rise of blood-pressure and a slowing of the pulse. It does not affect the respiration and acts as a mild nervous sedative. The sulphate of physostigmine being very deliquescent, the salicy-late should always be used.

In doses of one-seventy-fifth grain there is no danger of poisoning. Stevens reports the case of a woman who received by mistake, soon after an operation for double pyosalpinx, a hypodermic dose of 2 grains of eserine sulphate. Within two or three minutes the bowels moved profusely and involuntarily. The respirations became shallow and the pulse imperceptible. She remained unconscious for twelve hours, but recovered with no ill effects. This in spite of the enormous dose received.

The actions of atropine and physostigmine are entirely antagonistic except for the fact that both stimulate intestinal peristalsis. Atropine is, therefore, the antidote in exerine poisoning.

Craig found that after using eserine "morphine was rarely needed or required, except for distinctly extra-abdominal pain, but when so demanded either morphine or codeine can be given with greater freedom, as there is less danger of obnoxious constipation after its use."

Following this hint Schenck made in 1907 hypodermic tablets containing one-sixth grain morphine and one-seventy-fifth grain physostigmine. These were used in selected cases for six months with satisfactory results, but the tablets were not properly protected from the light and air, and when they turned brown were discarded.

This spring, following a conversation on the subject with Dr. E. M. Houghton, of the Research Department of Parke, Davis & Company, similar tablets were prepared, and Schenck has used them in all cases in which intestinal rest was not desired and in which there was no danger of masking important symptoms. The cases, numbering fifteen, are all comparatively simple ones, as he has been careful not to use the eserine when there was infection, intestinal injury, or other complication.

#### CARDIAC DISEASE IN CHILDREN.

In the course of a lecture on this topic in the Clinical Journal of April 3, 1912, Moon reminds us that in cases with chronic valvular disease which is well compensated, one does not so much require treatment as guidance. Plenty of fresh air, good food, and hygienic surroundings are of the first importance. Special care should be taken to guard against a fresh attack of rheumatism; the child should have woolen clothing next its skin, and not go out too readily in cold, damp weather. Where it is possible to choose a climate, one should select a dry, bracing place with plenty of sunshine and a house on gravel soil with a southerly aspect.

Diet.—The meals should be small, and in particular all excess of starchy foods and sweets must be avoided, which so readily give rise to flatulence and acidity; there is no objection to nitrogenous food being taken by children in ordinary quantities.

Exercise in moderation is undoubtedly good, but certain forms of it must be absolutely forbidden; thus swimming, and games which involve much running, such as football, also racquets and boxing, must be ruled out; nor is the element of competition to be permitted, for that always implies drawing upon the heart's reserve power. On the other hand, there is no objection to bicycling, if the patient will walk up the hills; riding, rowing, skating, and also cricket are all permissible in moderation. It is often well, according to Moon, even for cases with compensated heart lesions, to lie down for half an hour every day. With the first sign of failing compensation, as shown by shortness of breath, palpitation of the heart, or pulmonary congestion, then rest becomes imperative; it need not,

perhaps, be absolute, but it will certainly mean lying down for the larger part of the day. It may then be necessary to employ specific heart tonics, children taking digitalis very well; often this is suitably combined with an aperient, and a useful prescription of Dr. Eustace Smith's is infusion of digitalis, infusion of senna, infusion of calumba, one drachm of each once or twice a day for a child of ten years.

At the same time Moon has generally found in these early stages of failing compensation that small doses of arsenic and iron act extremely well. When compensation has completely broken down with pulmonary edema and ascites, then there is no material difference in the treatment of a child and an adult. On the whole dropsy is not so common in children as in adults; on the other hand, the liver is more affected than other organs, and one seldom fails to observe in it symptoms of cardiac congestion in the majority of cases.

Special caution must be observed as the time of puberty approaches; in particular one must be careful to prevent overpressure at school, and it is advisable that no serious employment should be engaged in till well after puberty is passed.

#### THE EXAMINATION OF CEREBRO-SPINAL FLUID.

DUNN and STEVENS give in the Interstate Medical Journal for April, 1912, a résumé of this subject which has a distinct therapeutic bearing. They conclude that:

- 1. Lumbar puncture should be resorted to almost as a routine in serious traumata of the central nervous system and in post-traumatic neurasthenia both as a diagnostic and therapeutic procedure.
- 2. Inflammatory affections of the brain and cord cause definite changes in the cerebrospinal fluid. Acute and chronic inflammatory affections (the so-called degenerative inflammatory types) can be differentiated by examination of the cerebrospinal fluid.
- 3. Simple degenerative conditions, such as combined degeneration, and the degen-

eration of pernicious anemia may cause no manifestations in the cerebrospinal fluid.

- 4. Parasyphilitic processes can be diagnosed in their earliest stages only by serological methods. Only in their early or exudative stages can we hope for curative therapy.
- 5. The effect of therapy may be checked up by occasional examinations of the cerebrospinal fluid.
- 6. A positive Wassermann reaction may occur in the cerebrospinal fluid in cerebrospinal syphilis.

## POINTS IN THE DIAGNOSIS AND NON-SURGICAL TREATMENT OF DUODENAL ULCER.

HERSCHELL in the Interstate Medical Journal for March, 1912, in discussing this subject expresses the belief that the acidity of the gastric juice must be kept as low as possible. It was formerly supposed that an excess in hydrochloric-acid acidity in the gastric juice was an important factor in the production of gastric and duodenal ulcer. We now know that such is probably not the case, and that granted a reduction in the resisting power of the gastric or duodenal mucosa, gastric juice of normal acidity is quite capable of determining an ulcerative process. That the reduction in the acidity of the gastric juice is an important factor in the cure of duodenal ulcer must be apparent from the experiments of Bolton, who found that the gastric ulcers, which are invariably caused by the injection of gastrotoxic substances into the peritoneums of guinea-pigs, were not formed if the acidity of the gastric juice was kept below normal by neutralization.

In practice the writer attempts to diminish the acidity of the gastric juice by giving 8 or 10 ounces of hot Vichy water two hours after meals, or the following powder stirred up in hot water:

B. Sodii bicarb., gr. x;
 Calcii carb., gr. x;
 Sac. lactis, gr. x;
 Ess. menth. pip., m. ij.

We must also secure the stomach against distention. One of the chief ways in which

a gastroenterostomy conduces to the healing of a duodenal ulcer is by preventing distention of the stomach. We can secure much the same result (a) by preventing pyloric spasm by the administration of atropine and alkalies; (b) by giving the food in small amounts at comparatively short intervals and in a finely divided condition; (c) by giving the drink, which should be hot water, not with the meals, but when the stomach is empty. It will then pass quickly out of the stomach and incidentally wash and cleanse the surface of the ulcer in the duodenum.

The bowels must be kept freely open. The formula which the writer usually first prescribes for this purpose is the following, which although not pleasant is of extreme efficiency:

B. Magnes. sulph., 3vj;
Ext. cascara liquid (Parke, Davis & Co.), 3iij;
Tinct. belladonnæ, m. xxx;
(This is omitted if the patient is already taking belladonnæ in the powders)
Aquæ chloroform, q. s. ad 3vj.

Sig.: One-sixth part is to be taken at bedtime mixed with an equal quantity of water. This dose may be increased or diminished according to the effect produced.

Herschell also believes that in these cases preparations of aloes should be avoided, and also those of agar-agar.

Any anemia present must be treated. In order not to interfere with the medicaments which are being given by the mouth, the writer invariably administers the iron in this affection by intramuscular injection into either the deltoid or the glutei. His favorite preparation is the cacodylate of iron in doses of 0.01 gramme made up to 1 Cc. with normal saline solution.

A suitable diet must be prescribed. This has to fulfil the following indications:

- (a) It must have a high combining power for the acid of the gastric juice.
- (b) It must excite the flow of gastric juice as little as possible.
  - (c) It must not distend the stomach.
- (d) The products of its digestion must be as unirritating as possible to the ulcer.

(e) It must provide a sufficient number of calories to preserve the nutrition equilibrium of the patient.

All these indications are met as far as is humanly possible by pounded meat, chicken, and bread.

#### THE OATMEAL CURE IN DIABETES.

In the Interstate Medical Journal for April, 1912, STROUSE says he thinks it is not very difficult to sum up the general value of oatmeal in diabetes. Practically all investigators, who have tested the cure in a thorough manner, agree that it is most beneficial, especially in severe cases where other means have failed to reduce either sugar output or signs of acidosis. Whether this action depends on any inherent quality of the oat starch is still a disputed point. The modus operandi must be considered as yet unexplained; numerous theories have been advanced, but none is supported by actual knowledge.

## PREGNANCY AND CHLOROFORM ANESTHESIA.

WHIPPLE in the Journal of Experimental Medicine of March 1, 1912, records experiments and gives this summary of his results:

Pregnant dogs are susceptible to chloroform administered shortly before delivery or during labor, and show the same degree of liver injury as normal dogs, or even a somewhat greater one.

Chloroform anesthesia may cause more or less hyaline necrosis in the border zone between the maternal and fetal parts of the placenta that may lead to hemorrhage, placental separation, and premature delivery.

Chloroform anesthesia causes no injury to the liver of the fetus nor to any other fetal organ, in spite of the fact that it can be demonstrated to be present in these tissues.

These experiments raise objections to the use of chloroform in pregnant women where an anesthetic must be continued for half an hour or longer. Chloroform anesthesia may be admissible for the few minutes at the end of the delivery, but when operative measures are necessary, before or after delivery, it is a dangerous anesthetic and surely capable of producing injury to the liver in the manner recognized in the case of normal persons.

Objections may be raised to the application of conclusions derived from experiments on dogs to human cases; but the similarity of the effects of chloroform in man and dog surely afford a sound basis of comparison.

Two fundamental facts would seem to be now established: (1) Normal human adults may be fatally poisoned (late chloroform poisoning) by chloroform anesthesia of one-half to one hour's duration. (2) Normal and pregnant dogs are equally susceptible to late chloroform poisoning, and may be fatally poisoned by an anesthesia of two hours' duration.

Hence one may conclude that probably normal and pregnant human beings are equally susceptible to chloroform poisoning, that chloroform anesthesia during any part of the pregnant period is capable of causing liver necrosis, and, consequently, that chloroform is a dangerous anesthetic.

## TREATMENT OF THE SO-CALLED HEMORRHAGIC DISEASE OF THE NEW-BORN.

Schloss and Commiskey in the American Journal of Diseases of Children for April, 1912, reach these conclusions:

- 1. In the hemorrhagic conditions of the new-born, the coagulation of the blood may be normal, delayed, or absent.
- 2. A deficiency or absence of thrombin or fibrinogen may give rise to imperfect blood coagulation and uncontrollable hemorrhage.
- 3. In some cases of hemorrhage in the new-born in which blood coagulation is apparently normal, it seems probable that the hemorrhage is due to some localizing vascular lesion or defect present only in the areas from which the bleeding occurs.
- 4. The subcutaneous injection of whole blood is harmless and is of apparent value in the treatment of the hemorrhage.

## A STUDY OF EXPERIMENTAL POISON-ING WITH CHLORAL HYDRATE.

HOPKINS in the American Journal of Obstetrics for April, 1912, reaches these conclusions from his experiments: That chloral hydrate may occasionally produce fatty changes in the liver similar to those caused by small doses of chloroform. (2) That it is impossible to produce by administration of chloral hydrate necroses in the liver similar to those found in delayed chloroform poisoning and eclampsia. That chloral hydrate produces no histological changes in the kidneys. (4) That chloral hydrate causes an increase in the urinary nitrogen which may be delayed until after recovery from anesthesia and tends to return again to normal.

#### NARCOSIS.

In the course of an address printed in the Bulletin of the John Hopkins Hospital for April, 1912, Verworn asks and tries to answer the question, What occurs in the neurons of the cerebral cortex during an act of consciousness? Verworn asserts he is far from intending to give here a detailed analysis of these processes. He wishes to emphasize only a single general fact. Let us conceive a condition of the cerebral cortex in which the neurons are in metabolic equilibrium—that is, in which the two phases of metabolism, the anabolic and catabolic phases, balance each other. should have then a state of complete rest, in which no act of consciousness takes place. An act of consciousness ensues only when the metabolic equilibrium in a chain of associated neurons is disturbed by an exciting stimulus which causes a sudden increase of the catabolic phase. Every act of consciousness is the expression of a catabolic disturbance in the cortical neurons. This is not merely an assumption; it is shown, among other things, by the fact that even the simplest conscious process requires the associated cooperation of several ganglioncell stations, and that on the other hand the nerve fibers which provide for this associated cooperation conduct no other impulses except catabolic excitation processes. On this general basis, for all processes of consciousness there are two possible origins of unconsciousness. Loss of consciousness will occur either because the ganglion cells are depressed, so that the external stimuli produce no excitation, or because exciting stimuli are absent. The first condition prevails in narcosis; the irritability is so much depressed that stimulation is ineffective. In sleep, the second alternative is predominant; the first plays at most the rôle of a predisposing part for the induction of sleep. We sleep, and determine the moment of going to sleep by limiting as far as possible the sensory stimuli, especially the optical. This state of the utmost exclusion of external stimuli lasts throughout the entire period of sleep. This is supported to a certain extent by fatigue—that is, the decrease of irritability, which the ganglion cells have sustained by the constant action of sensory stimuli while awake during the day. A comparison of the processes which occur in the ganglion cells of the cerebral cortex during sleep and during narcosis will. show us plainly how diametrically opposed these are.

During sleep, restitution occurs. irritability, which becomes reduced in the course of the day as a result of the fatiguing action of sensory stimuli, gradually rises again. The fatigue of the ganglion cells, which, as we know, depends only on a relative lack of oxygen, becomes completely dispelled. The supply of oxygen, which during constant activity was not quite sufficient to keep irritability at its maximum, is, after the cessation of functional demands, fully sufficient to banish the fatigue. In short, during sleep, restoration occurs principally by the action of oxygen. In the morning the ganglion cells are refreshed and possess their full capacity for work.

How different is narcosis! In narcosis there is, on the contrary, as we have seen, a depression of the oxidation processes. Experiments show that even with a free supply of oxygen a fatigued ganglion cell does not recover at all during narcosis.

There occurs, rather, a gradual asphyxia, and although this process is only developed to a small extent in light narcosis, still it presents just the reverse of that which sleep brings to the ganglion cells—in the one case, recovery from fatigue by oxidation; in the other, prevention of restitution by inhibition of the oxidation process. There can be no confusion between sleep and narcosis.

If we use narcotics to induce sleep, we must always bear in mind that no true sleep occurs as long as the narcosis of the cortex We can speak of "hypnotics," or "remedies for sleep" (Schlafmittel), only in the sense that, when there is constant excitation of the ganglion cells, they reduce irritability and induce a greater degree of depression, so that true sleep may take place as the narcosis passes off. In that sense a hypnotic may prove beneficial in the hands of the physician, and when used sparingly. The physician must, however, never forget that not the entire period of unconsciousness which follows the use of the hypnotic is true sleep, but that at first it is, rather, a depression, the injurious effects of which will manifest themselves when the hypnotic is used for a longer period.

## PRIMARY MUCOUS COLITIS.

Daniel, in the *Proctologist* for March, 1912, has this to say in regard to the treatment of this condition with lavage through the appendix which has been opened:

In general, normal saline or 5-per-cent glucose should be used, as the least irritating of lotions, but often one is forced to use chemical lotions, for the following reasons: In some cases if 1½ or even 2 pints of saline is passed through the appendix it works along the bowel and distends the sigmoid, but it is not expelled spontaneously; sometimes gentle massage over the colon leads to its expulsion, but in other cases this fails (Daniel refers to efforts on the part of the patient). In such cases it may be necessary to use astringents; of these the mildest are employed—hazeline, zinc sulphate, a few drops of formalin, or

the smallest quantity of silver nitrate, either of which generally leads to a spontaneous evacuation. When the solution is retained it leads to a certain amount of bothersome diuresis; it is surprising how rapidly the fluid is at times absorbed, while in other cases it is slower. In one case Daniel reports having passed the sigmoidoscope while the solution was retained, and saw the sigmorectal sphincter tightly closed, but a very slight pressure from below relaxed it. Thereafter he found if a small enema of half a pint was used the colonic fluid was usually expelled with the enema.

Want of improvement is another reason which leads to the use of astringents.

Hawkins and Mummery both use olive oil, believing its non-irritating qualities suit the mucosa and bring away the mucus effectively. Daniel asserts he has passed liquid petrolatum into the bowel after the saline and bowel contents have passed, which he believes does more good and is less extravagant.

Lavage per Anum.—At Plombières the water used is a simple muriated water, and its remedial effect is attributed to its radioactivity. The method of administering the douche is carefully worked out; the water is heated to about three degrees above body heat, and the "head" of fluid maintained constant by means of a system of cisterns specially devised; some 30 to 40 ounces are used, and it is passed by a long rectal tube which is supposed to pass into the pelvic colon; the patient lies first on the left side, then on the back, and lastly on the right side, as it is assumed that by these postures and antiperistalsis the fluid reaches the cecum.

At Harrogate weak sulphur water—especially one well—is used. At both spas hot baths and massage are given, and in some instances a form of "submarine" douche of water at a higher temperature (110°) than that of the bath is directed to the abdomen for ten to twenty minutes, while the patient is submerged in the bath. The whole séance lasts from forty to ninety minutes. The healthy surroundings, the changes of environment, and the hope of at

last a successful treatment with recovery do a great deal to improve these patients, and no doubt many cases of chronic constipation are cured, but true colitis cases relapse fairly soon.

That the administration of an enema may be dangerous even in mucous colitis is probable: in cases of mild or unknown ulcerative colitis it has been proved so repeatedly, two cases within the past year having died from changes set up by an injection. The first case was admitted for a minor operation quite unconnected with the gastrointestinal tract. While an enema of 3 pints was being administered the patient felt acute abdominal pain and became collapsed; she died in a few days from perforative peritonitis. The second case was to undergo a small operation, also not connected with the gastrointestinal tract; while being given an enema (again of 3 pints) she collapsed, and in a week's time a tube of mucosa 18 inches long was passed as a slough. In spite of treatment she died. Neither of these cases was aware or gave a history of colitis, but the first had a definite ulceration widely spread, and the second had two ulcers in the apparently healthy transverse colon.

In the first case an ulcer in the pelvic colon had ruptured into the peritoneum, while the enema in the second must have found an entry into the submucosa through the floor of an ulcer and stripped the whole mucosa from the splenic flexure to the sigmorectal sphincter; the rectum was not denuded of any mucosa and appeared fairly normal by the sigmoidoscope.

Daniel thinks no drug treatment is of as much value as the administration of one or two teaspoonfuls of castor oil daily, given at first as soon as the patient wakes in the morning—it usually acts in two or three hours; at a later stage it may be taken the last thing at night, and it will act first thing in the morning. In addition he finds benefit from liquid petrolatum, given in gelatin capsules, or plain, or as an emulsion in suspension; it has a tendency to nauseate, in which case the capsules are necessary. Olive oil may be given instead.

Some physicians give as much as one to five ounces of oil per diem, and if it is tolerated it does much good; some require that only such foods as leave little residue be used; others say "the colon is not empty normally, so give foods with much residue."

Daniel himself tries every patient with all forms of food; some tolerate well what others fail entirely to take. Building up is most essential, but is a great difficulty. The lactic acid milk treatment may be tried as one pawn in the game; he has little faith in its specific efficacy, but as some authorities consider a total milk diet the most successful in their hands this mode of preparing the milk may be profitably employed; it will at least decrease the monotony.

#### THE BANE OF BROMIDES.

ATKINSON under this title in the Medical Fortnightly of March 25, 1912, says almost any therapeutic expedient might justify itself upon the plea that there is nothing better available; although, as he has tried to show, the bromide treatment of epilepsy does more harm than good, and therefore ought to be denied this justification. However, we need not argue the point, because this kind of a plea is no longer valid. The treatment of epilepsy with solanine and verbenin, with lecithin intercurrently, is available to all, and is so far superior to the bromide therapy as to admit of no comparison. Solanine and verbenin are both of them organic vegetable alkaloids, with a low chemical potential, a normal pharmacological action, and a fractional dosage. Lecithin is a normal preparation of nerve substance, with no pharmacological properties at all, but an organotherapeutic action.

The proof of the pudding is in the eating. Under the bromide treatment his experience with epilepsy was the common experience: of failure, and worse, so that he often deliberately withheld it as being the lesser evil. Since he has abandoned the bromide treatment and employed solanine, verbenin, and lecithin, he has averaged a cure in 50 per cent of his cases—by which he means

that at the end of a period varying from six months to a year he is unable to discontinue the remedies entirely without a return of the seizures, while at the same time the patient's mental state is markedly cleared and his general condition greatly improved. In all but a very small number of obstinate cases the intervals between the fits are progressively lengthened and the mentality correspondingly brightened. Atkinson asserts that what he can do any one else can do, if he will but free himself from the obsession of the bromides and avail himself of therapeutic agencies which lie to his hand whose immeasurably superior effects may be had for the trying.

He asserts he has had no idea of posing as a rabid extremist. The bromides have their uses. Even in epilepsy they are occasionally useful as an emergency measure. In status epilepticus he does not hesitate to give them in large doses, to tide over; just as he would use chloroform to tide over a case of eclampsia. But as a steady, therapeutic measure, he arraigns them as totally unfit, wholly unwarrantable, worse than useless, and altogether unnecessary.

## SUPRARENAL GLAND EXTRACT IN CARDIAC DYSPNEA AND CARDIAC DROPSY.

VOIGHT reminds us, in the British Medical Journal of March 9, 1912, that the practitioner often has to deal with failure of compensation in cardiac cases. Digitalis, strophanthus, convallaria, caffeine-all are useful in their turn; but sometimes one and all may fail us. There is no doubt that strychnine hypodermically is an invaluable remedy in failure of cardiac compensation; that the nitrites are of great service in some cases: that atropine subcutaneously relieves the dyspnea of others; that potassium iodide is not to be despised as a heart tonic; and that the Nauheim bath treatment, judiciously applied and carefully supervised, does wonders in the early stages of compensation failure.

But there is another remedy which can be relied on in some cases. This is suprarenal gland—the solution of the extract of the gland, used hypodermically or by intravenous injection, or the gland substance, given by the mouth in tablet form.

Voight has had under his care several cardiac cases in which dyspnea and dropsy were prominent symptoms, and in which suprarenal gland was administered. proposes here to give a report from his notes on two of these cases only. In the others the action of the remedy in combating the symptoms was maintained. In all, more or less severe dyspnea was relieved, sometimes by the hypodermic injection of from 5 or 10 to 15 minims of the 1-in-1000 adrenalin solution (Parke, Davis & Co.), at other times by a 5-grain tablet of the suprarenal gland substance administered by the mouth. When the dyspnea was not very severe, the dose of adrenalin solution injected hypodermically was from 5 to 10 minims (1-in-1000 solution), and the 5grain tablet of the gland substance was halved for each dose by the mouth. In general practice one cannot always make provision for the amount of urine passed by the patient in twenty-four hours to be accurately measured. But where he succeeded in making such provision while his patients were under treatment by hypodermic injections of adrenalin or by the tablets of suprarenal gland substance administered by the mouth, he almost invariably found the quantity of urine increased and the dropsy at least temporarily diminished by the treatment. Sometimes the apparent effect of the remedy in this respect was marked and striking.

## A NEW METHOD FOR CONTROLLING THE ADMINISTRATION OF SERUM IN EPIDEMIC MENINGITIS.

Sophian in the Journal of the American Medical Association of March 23, 1912, states that the effect on the blood-pressure is inconstant on withdrawing fluid by lumbar puncture in meningitis; most often there is a drop in blood-pressure, occasionally quite a large one, especially on withdrawal of large quantities of fluid. Sophian's ordinary procedure in an adult case, beginning with an average blood-pressure

of 110 mm. of mercury, is to stop the further withdrawal of fluid if there is a moderate drop in blood-pressure-for example, of 10 mm. of mercury; in children, of 5 Occasionally the blood-pressure begins to drop very quickly as soon as the removal of fluid is begun; the blood-pressure then is a guide indicating how rapidly or slowly the fluid may be withdrawn. other cases there is no change in bloodpressure, or there may even be a rise, on removing fluid; one can withdraw as much fluid as possible, usually till the cerebrospinal fluid pressure is normal, this being roughly measured by counting the drops of fluid as they flow from the needle; one drop of fluid every three to five seconds corresponds approximately to a normal pressure.

After withdrawal of a suitable quantity of cerebrospinal fluid, the serum is ready to be injected. As usual, the serum is warmed to body temperature and then injected slowly, either by the gravity method or by syringe. Sophian much prefers the gravity method of injecting the serum; it has many advantages and few of the disadvantages of the syringe method. As a rule, as soon as the injection of serum is begun, the bloodpressure drops and continues to drop steadily. Reasoning by the old method of injecting serum, one would expect a rise in blood-pressure; this, however, is rarely the case. As stated, in the great majority of cases when the injection of serum into the subarachnoid space is begun, the bloodpressure drops and continues dropping steadily as the larger quantity of serum is injected; after there has been a material drop, for example, of 20 to 30 mm. of mercury, the blood-pressure begins to drop relatively much faster if more serum is injected. Thus if an injection of 15 Cc. of serum causes a drop of 20 mm. of mercury in blood-pressure, injecting only a few more cubic centimeters of serum may cause a sudden drop of 40 mm. of mercury more, making a total drop of 60 mm. or more.

In one robust adult whom Sophian treated there was a drop of 30 mm. of mercury after injecting only 12 Cc. of serum. His was a very severe case, and Sophian wished

to introduce as much serum as possible; he injected 3 Cc. more, making a total of 15 Cc. of serum. His blood-pressure, at one bound, dropped 30 mm. more, making a total drop of 60 mm. His clinical signs at this time did not indicate shock; the pulse was fair, the color was good, but breathing was shallow and a little irregular. phian decided, however, to watch'him for a time. A few minutes later he suddenly stopped breathing; then his heart stopped. Immediate active treatment gave immediate response. It is easy to see how these patients who have had a large drop in bloodpressure, with not much other evidence of shock, may thus suddenly succumb either during or after the injection.

Sophian's usual technique in the operation of administering serum is to have one blood-pressure take readings throughout the whole operation. blood-pressure drops during the removal of cerebrospinal fluid, he uses it as a guide indicating when to stop withdrawing fluid. He accepts, as a rule, the arbitrary drop of 10 mm. of mercury. He uses the bloodpressure as an absolute guide, indicating the quantity of serum that he can safely inject; here it is also a guide as to how quickly the serum may be injected. As a rule, very rapid injection under considerable force will cause a greater drop in bloodpressure. By the gravity method the serum is allowed to run in slowly by gravity, the funnel being raised or lowered to regulate The barrel of a 10- to 15-Cc. antitoxin syringe may be used as the funnel, attached to about 12 inches of rubber tubing about one-quarter inch in diameter. Ten minutes is a good average time to allow for the fluid to run in, though Sophian asserts he has frequently taken twenty minutes or longer, especially in cases beginning with a low blood-pressure, or when the blood-pressure dropped very quickly. It is much harder to control the rate of injection by the syringe method, and one may accidentally use too much force in injecting. Sophian has found that a total drop of 20 mm. of mercury in an adult with average blood-pressure of 110 to 120 mm. of mercury is a safe indication to stop the further injection of serum. Occasionally there is an initial rise in blood-pressure after the injection of a few cubic centimeters of serum, followed by a subsequent drop as larger quantities of serum are injected. Very rarely the blood-pressure shows a material rise after the injection of serum.

Since Sophian began using this method. the average dose of serum that he has used has been considerably smaller-frequently not more than 15 Cc., averaging 20 to 25 Cc. in adults, and in proportion in children. When the blood-pressure has allowed, Sophian has injected larger quantities also, 30 to 40 Cc., very rarely more. Judging by the good results with the smaller doses of serum, he believes that it is very rarely necessary or beneficial to, inject more than the maximum of 40 Cc. of serum. method is of great benefit not only in the average case, but also in the atypical and difficult one; thus in cases with thick plastic exudate, when the fluid will not flow through the needle, it is a reliable guide, absolutely indicating how much serum one can inject safely under pressure; similarly in cases with little exudate, in which one introduces a larger quantity of serum than the cerebrospinal fluid withdrawn. If the fluid be injected into the subarachnoid space, under wrong diagnosis, in cases with posterior basic meningitis, the drop in blood-pressure will be very great after injecting only a few cubic centimeters. The blood-pressure is also a guide in injecting serum directly into the ventricles, in cases of posterior basic meningitis.

What clinical symptoms are associated with the drop in blood-pressure? In the order of their appearance these are: Stupor, which deepens more and more as the blood-pressure fails; respiration becomes superficial and irregular, at times deep, stertorous, slow, and irregular; with a large drop in blood-pressure, breathing may stop suddenly; pulse will often continue good, even with a large drop in blood-pressure, and even with marked change in the breathing; at times the pulse becomes slow and irregular—the pulse, therefore, is very

often misleading; the pupils dilate, increasing with the greater drop; incontinence of feces and urine occurring during a lumbar puncture usually accompanies a drop in blood-pressure, and is a warning.

What is the immediate treatment for severe symptoms during or after the injection of serum? As already indicated, with a material drop in blood-pressure further injection of serum should be stopped. the blood-pressure suddenly drops very much, possibly accompanied by the above-mentioned symptoms, the indication is immediately to remove fluid from the canal: if one uses the gravity method for injecting, this is easily done by lowering the funnel; in bad cases in which the breathing stops, as much fluid as possible should be removed and active artificial respiration begun. Adrenalin in large doses by intramuscular injection, and other vasomotor stimulants, and atropine help. Even with severe symptoms, if these measures be applied immediately and actively, the patient usually responds.

What effect has adrenalin administered by intramuscular injection before the puncture in preventing the symptoms mentioned? Adrenalin administered before the puncture will tend to prevent the large drop in blood-pressure on injecting serum. Sophian prefers not to use adrenalin in this way except in cases with initial low blood-pressure.

In reference to the use of general anesthetics during the operation, Sophian states, briefly, that in his experience general anesthesia is dangerous, and that it should be used only when absolutely necessary in violent patients. During the administration of an anesthetic the blood-pressure is a comforting guide. He has found that giving many patients water through a straw will keep them quiet; even delirious adults will reflexly suck on the straw and quickly become quiet. During the operation the patient will sometimes drink as much as nine or ten glasses of water. It acts especially well with children; he has referred to it as "water anesthesia."

He is now tabulating his results since he

has used the blood-pressure method in treatment. Most of the cases were studied in the present Texas epidemic. The results were extremely good. The general reaction following the injections was usually not as severe as formerly; temperature did not rise as much; the patient was usually more comfortable and the general con-The dose of serum, as dition better. stated, was much smaller; very young children about or under one year especially at times could not bear more than 2 to 3 or 4 Cc. of serum, and in a number of cases responded wonderfully well. In 185 cases, roughly tabulated, the total mortality was 25 per cent, this including many patients who were brought to the hospital in very bad condition. A number were brought in during the very last stages, and some were brought in from a distance of up to a hundred miles; others, with pulmonary edema, who died a few minutes later. Excluding these apparently hopeless cases in which the patients died in from a few minutes to twenty-four hours after admission, the mortality was about 10 per cent. The cases considered hopeless were marked so on the chart immediately on admission.

Most of the meningitis cases studied were in adults; many patients were past middle age; they included negroes and whites. The mortality was the highest among negroes; they seemed to offer little resistance, and easily developed bronchopneumonia. In children the mortality after exclusion of apparently hopeless cases was roughly about 5 to 6 per cent, among them being a number below one year of age. There were also about seven cases of posterior basic meningitis on the list.

Sophian's conclusions are as follows:

- 1. The old method of administering serum is inaccurate and sometimes dangerous.
- 2. Blood-pressure change is a very accurate guide to the quantity of serum that can be safely injected, frequently also indicating the quantity of cerebrospinal fluid that can be withdrawn.
- 3. The average dose of serum as controlled by blood-pressure is smaller than by the old method.

4. Following an injection of serum, controlled by blood-pressure, the after-effects are usually much less severe.

## THE MANAGEMENT OF CARDIAC FAILURE IN DIPHTHERIA.

According to COGHLAN, writing in the British Medical Journal of March 9, 1912, the treatment of patients suffering from cardiac failure accompanied by persistent vomiting should be conducted on the following lines:

- 1. Position of the patient in bed. The head should be low to prevent cerebral anemia, while the foot of the bed should be elevated. This may help retention of the rectal feeds.
- 2. Clothing. Patients during the stage of cardiac depression become restless and throw off the bedclothes. They should therefore be warmly clad, and for the same reason hot-water bottles should be placed in the bed.
- 3. Nourishment. All food by the mouth should be stopped and nutrient enemata should be administered. The rectum should be irrigated twice daily with warm boracic solution, otherwise irritation may be set up, and retention of nutrients become impossible.

Treatment of Cardiac Depression.—This must be combated by the administration of medicines. Various drugs have been used for this purpose, chief amongst them being strychnine, belladonna, and adrenalin. Since administering them in combination hypodermically he has had four successful cases, though, of course, he has also had his failures. The formula used is as follows:

Atropine sulphate, 1/100 grain; Strychnine hydrochloride, 1/100 grain; Adrenalin chloride solution (1 in 1000), 5 minims;

Water, 20 minims.

To be administered hypodermically every four hours.

That the above-mentioned combination exercised a beneficial influence on the favorable course of the cases followed Coghlan is convinced, and in this opinion he is

supported by Dr. Foord Caiger, who watched the cases with him from the very commencement.

Treatment of Urgent Symptoms.—Thirst. This is first met by the administration twice daily of small enemata of normal saline solution, whilst teaspoonful doses of iced water may be allowed as soon as the vomiting ceases.

Dryness of the mouth may be alleviated by the application of such remedies as glycerin and boracic acid, half strength.

Pain is most rapidly relieved by the frequent application of hot fomentations.

Constipation. It may be necessary to obtain an action of the bowels, and it is important to bear in mind that, owing to the serious cardiac depression, all purgatives are contraindicated. For this reason small enemata of glycerin and water are preferable.

## CARCINOMA OF THE GASTROIN-TESTINAL TRACT.

WILLIAM J. MAYO (The Journal-Lancet, Jan. 15, 1912) states that from October 1, 1897, to November 1, 1911, 1264 cases of carcinoma of the gastrointestinal tract were operated on at St. Mary's Hospital. Of this number, 863 involved the stomach, 14 the small intestine, 219 the large intestine, and 168 the rectum. These statistics show that carcinomata of the stomach form more than two-thirds of all the carcinomata of the gastrointestinal tract. Carcinomata of the large intestine come next in relative order, and the rectum follows with three-fourths as many as the colon.

In the total number (863) of carcinomata of the stomach, it was possible to do the radical operation in only 307, or 35.5 per cent of the cases. In the group of carcinomata of the small intestine, five, or 35.7 per cent, of the patients were submitted to radical operation; in carcinomata of the large intestine and rectum, nearly three-fourths of the patients were operated on radically.

These data would indicate that the stomach is the organ most frequently affected with cancer, and that only one-third of the patients submitted to operation are operated on with any prospect of cure. The remainder are subjected to palliative operations, such as gastrojejunostomy and gastrostomy, or to explorations.

The number of carcinomata of the small intestine is curiously small in comparison with the associated organs. The small intestine is the most primitive part of the gastrointestinal tract, and it is reasonable to suppose that its longer heredity makes it more resistant to malignancy than the stomach and large intestine, which organs were added later in the course of development.

In studying the question of permanent cures following resections of the gastrointestinal tract, we find that of the total number of cases of cancer of the stomach submitted to radical operation, more than 23 per cent of the patients who recovered from the operation and whose present condition has been ascertained are alive and well over five years. Fifty per cent of patients submitted to radical operation for cancer of the large intestine, and 30 per cent with cancer of the rectum who recovered from operation and who have been traced, are alive and well over five years. Every case dying within the five-year period is counted as a death from the disease, which is not fair to the statistics, as the normal deathrate during the five-year period would approximate 8 per cent.

Taken as a whole, these statistics indicate that carcinomata of the gastrointestinal tract which are sufficiently localized to justify radical operation give results fully as good as carcinomata in other parts of the body. The pessimism of the medical profession regarding malignant disease of the gastrointestinal tract is not justified by the facts. It is the failure to make diagnosis during the stage when the disease is still localized, and not any peculiar malignant tendencies of the process itself, which accounts for the fatal character of cancer in this region.

The most important question in connection with the radical cure of carcinomata concerns the lymphatics, and the proof of

this assertion cannot be better shown than in the results as to permanent cure after resection of the various organs of the gastrointestinal tract. The stomach is highly supplied with lymphatics and gives the smallest percentage of radical cures. The large intestine, having the least lymphatics, gives the highest percentage of radical cures, and the rectum, with a moderate supply of lymphatics, gives better results than the stomach, but less favorable results than the large intestine.

If one were to drop a line vertically from the cardiac orifice across the greater curvature, the stomach would be divided into two unequal parts; the larger part, composed of the dome and fundus, has but a scanty supply of lymphatics, which pass to the left to the glands lying in the splenic area, and to the cardiac glands about the esophagus. The smaller pyloric segment has ninetenths of all the lymphatics of the stomach. They are divided into four groups:

The glands along the lesser curvature lying in the wall of the stomach itself and draining into the glands about the celiac axis.

Those along the greater curvature which lie with the gastroepiploic vessels. In this region the lymphatic current passes from left to right toward the pylorus.

That important group lying about the pylorus, the first portion of the duodenum, and the head of the pancreas.

The few glands which pass with the superior pyloric vessels.

The situation of these four groups of glands is definitely determined by the four blood-vessels, so that early ligation of the gastric, gastroduodenal, superior pyloric, and gastroepiploic vessels not only permits bloodless operation, but enables radical removal of the tributary lymphatics. Unfortunately, this glandular scheme of lymphatic drainage may be disturbed, first, because of the fact that lymphatic drainage may be irregular, passing by some glands and emptying into more distant ones; or, secondly, by blockage of a main lymphatic trunk, and the lymph flow may be turned into by-paths leading into the preaortic

glands. When the disease is advanced, both of these conditions may be found to exist.

The mortality following resections of the stomach is steadily diminishing. It is now from five to eight per cent, and depends more upon the patient's condition at the time of operation than upon the operation itself. Taking into consideration that, at the present time, the initial recoveries are well above 90 per cent, and that the patients who recover get a chance of cure somewhat better than 25 per cent, it certainly seems incumbent upon the medical profession to make a more determined effort toward an early diagnosis.

It may be stated as an axiom that cancer as cancer in the stomach does not produce symptoms upon which an early diagnosis can be made. Only when its situation makes a palpable tumor-mass or produces obstruction can a probable diagnosis be established.

Primary carcinomata of the small intestine are exceedingly rare, and but few cases have come under their observation. Of the 14 cases reported in this series, five were in the duodenum, and none of them were operable. In two cases, the duodenojejunal angle was involved, and both were inoperable. Of the remaining nine cases, four involved the jejunum, and five the ileum. In two of the five cases submitted to excision, the disease had begun in a pedunculated adenoma or papilloma, and in both intussusception was present.

The large intestine is a most interesting field for study. Morphologically, it begins at the ileocecal orifice and ends at the rectum. Embryologically and physiologically, it is composed of two entirely separate organs. Taking the gastrointestinal tract as a whole, we find that the celiac axis supplies those organs derived from the foregutthat is, the stomach, liver, pancreas, and duodenum, down to the common duct. The superior mesenteric artery supplies all of those organs which are derived from the midgut and which are instrumental in assimilation and absorption. They are composed of the duodenum beyond the common duct, the jejunum, ileum, cecum, and as-

cending and transverse colon as far as the splenic flexure. In these organs which receive their blood-supply from the superior mesenteric artery, the normal peristalsis is onward. Ninety per cent of the solids are picked up in the small intestines, while 50 per cent of the liquids and 10 per cent of the solids are absorbed in the cecum and colon proximal to the splenic flexure. The inferior mesenteric artery supplies the derivatives of the hindgut, and the normal movement, excepting during defecation, is antiperistaltic. By means of mucous currents, the distal colon is intermittently engaged in passing material for further elaboration and assimilation backward into the area of midgut absorption. Under normal conditions the contents of the large intestine, as far as the splenic flexure, are fluid or semisolid. The descending colon is usually empty, acting as a passageway only into the sigmoid, where the feces become more solid in character.

Tumors of the cecum and colon proximal to the splenic flexure are sometimes accompanied by changes in metabolism; the nutrition of the patient often suffers, and profound anemia may result. Tumors of the descending colon and sigmoid are seldom accompanied by changes in nutrition, and it is the mechanical effects of the tumor which first call attention to the patient's condition.

The surgical treatment of tumors of the large intestine is greatly simplified by the study of its embryology and anatomy. The large intestine is formed on the left side of the abdomen. The head of the colon begins to rotate at about the eleventh week. As the rotation progresses the colon carries with it its blood-vessels, lymphatics, and sympathetic ganglia; and when its normal situation is finally reached, the outer layer of mesenteric attachment is merely a peritoneal adhesion, the division of which, at any situation, enables that part of the colon to be turned upon its long inner mesenteric leaf, which contains all of the important structures.

Generally speaking, malignant disease in any part of the large intestine proximal to the middle of the transverse colon is treated best by removal of all the large intestine up to and including the growth, doing lateral ileocolostomy. Beyond this point resection of the colon in one or two stages is preferred.

The lymphatics of the large intestine lie with the blood-vessels, and usually are easily removed. Many times when the lymphatics are enlarged, microscopic examination shows it to be the result of infection, and not of carcinomata. In the early stage of the disease proper mobilization of the large intestine, permitting one to secure the blood-supply with careful and accurate removal of the glands, gives a prospect of cure which justifies the most extensive operations. It sometimes happens that one or more loops of the small intestine may have become adherent and involved secondarily with the tumor mass. As a rule this takes place along the periphery of the bowel. On a number of occasions Mayo has first resected a loop of the small intestine; twice he has removed two separate loops, and in one instance three loops, removing the primary growth in the colon with the portions of the small intestine attached. In four cases he removed a portion of the bladder, and in three cases the uterus was coincidentally removed. The ultimate results in these cases of multiple resections have been surprisingly good; several such patients are alive and well more than five years.

The radical cure for carcinomata of the rectum has a bad name in surgery, which is due more to inefficient methods of operation and purely sentimental attempts to conserve function than to the character and location of the disease. A permanent colostomy in the middle of the left rectus muscle should be made as the primary operation in the majority of cases of carcinomata of the ampulla of the rectum, and at a second operation, after the lower segment has been properly cleansed, the entire rectum should be removed from behind. This method offers the patient moderate control, with the best chance of a permanent cure.

High rectal and rectosigmoid growths will often be best approached through the

abdomen or by the combined method. The perineal operation should be reserved for growths in the anal region.

The frequency with which secondary carcinomata of the liver, peritoneum, or inoperable glandular involvement occur makes it imperative in all cases of carcinomata of the rectum and rectosigmoid to first open and thoroughly explore the abdomen to see whether the case is one which should be submitted to operation; and if advisable a permanent colostomy can be made at this time.

The diagnosis of cancer of the rectum is so easy that one wonders why so many patients come for consultation without a diagnosis, and why nearly 15 per cent of them have been recently operated on for supposed hemorrhoids. It is a simple matter to examine the rectum digitally, and it requires but little skill to use a proctoscope or sigmoidoscope. Neglect of these simple methods of examination causes not only disaster to the patient, but injury to the practitioner's reputation.

Lack of examination, rather than lack of knowledge, is responsible for most mistakes in diagnosis.

## ACUTE, SPONTANEOUS PERFORATION OF THE BILIARY SYSTEM INTO THE FREE PERITONEAL CAVITY.

McWilliams (Annals of Surgery, February, 1912), stimulated thereto by an experience of two cases of perforation of the gall-bladder into the free peritoneal cavity, has conducted a study of the histories of operations on the biliary system in the Presbyterian Hospital for the past fifteen years. There are 365 such operations, with six in which the bile had extravasated through a perforation in the biliary system into the more or less free peritoneal cavity. From a study of the literature he has been able to collect 108 such cases. His conclusions to the paper are as follows:

In 3180 operations in the biliary system, acute spontaneous perforation into the free peritoneal cavity occurred 29 times, or 0.9 per cent. It is thus a very rare accident.

In 90 cases of perforation, 82 of them, or

91 per cent, occurred in the gall-bladder; three, or 3.3 per cent, perforated through the cystic duct; four, or 4.4 per cent, through the common duct; while but one, or 1.1 per cent, perforated through the hepatic duct.

Calculi are a great factor in causing perforation, for in 80 out of 108 cases, or 74 per cent, stones were found at the time of the operations. In 14 cases, or 13 per cent, it was found that no stones were present after adequate search. In the 14 remaining cases, or 13 per cent, stones may or may not have been present as no mention is made of them.

In but nine cases is it distinctly stated that gangrene was present.

Of 99 patients whose ages are given, the average was 50 years. Before fifty years there were 44 cases with 63 per cent of recoveries, while beyond fifty years there were 55 cases with 46 per cent of recoveries. Between fifty and sixty years there were 35 cases with but 14 recoveries.

Sixty-two of the cases occurred in women, or 60 per cent, and they stand the disease better than men, the mortality in women being 44 per cent as against 54 per cent in men.

Of 108 cases operated upon, 56 recovered, or 51 per cent, while 52 died, or 48 per cent. This is in contrast to the 28 traumatic ruptures reported by Rickets, operated upon with 22 recoveries, or 78 per cent. The difference is due to infection.

Early operation, as in all forms of peritonitis, is the best guarantee of success; thus, of seven cases operated upon within twelve hours of the perforation, six, or 85 per cent, recovered; of 15 operated upon within one day of the perforation, 10, or 66 per cent, recovered; of 14 within two days, seven recovered, or 50 per cent; of 16 operated upon within three days of the perforation, eight recovered, or 50 per cent; while of 10 cases that had gone four days before operation only two recovered, or 20 per cent.

Suture of the perforation is to be unhesitatingly condemned. Four out of five cases thus treated died. Simple incision of the

abdomen with drainage of the biliary region gave 47 per cent of recoveries. With cholecystectomy 48 per cent recovered. The best results were obtained with cholecystostomy, with which 61 per cent recovered.

## THE CAUSATION AND PREVENTION OF CERTAIN TOXIC SYMPTOMS FOLLOWING THE ADMINISTRATION OF SALVARSAN.

McIntosh, Fildes and Dearden (Lancet, March 9, 1912) found experimentally that the introduction of sterile laboratory salt solution is toxic and that the injection of microbe-free saline solution is non-toxic. The addition of dead bacteria isolated from the laboratory saline solution before sterilization to the non-toxic microbe-free saline solution renders the latter toxic. The toxic effect is due to the microbes themselves and not to endotoxins derived from them. The toxic effect is not due to any one variety of microbe. No increased toxicity or anaphylaxis was found to follow a second injection of the microbes.

Yakimoff has shown that salvarsan injected into animals along with various dead bacteria is more toxic than salvarsan alone: that is to say, when such bacteria are present, a smaller dose of salvarsan will suffice to kill the animal than when no bacteria are present. It is considered that this increase in toxicity is the cause of the rigors and toxic symptoms which are observed. The salvarsan is more organotrophic in the presence of bacterial toxins and less parasitotrophic, and it follows that salvarsan given in a toxic saline solution is a less efficient spirochætacidal remedy than salvarsan dissolved in non-toxic saline solution. As regards the increased toxic symptoms usually noticed in secondary syphilis, the same argument will apply. It is invariably found that a dose of a chemotherapeutic substance which will be readily borne by a normal animal will kill a similar animal infected with trypanosomes or spirochætæ; in other words, the substance is relatively more toxic in an infected animal than in an uninfected. Yakimoff has definitely shown

that the toxicity of salvarsan tested upon rabbits infected with trypanosomes is proportionate to the number of trypanosomes present in the rabbits. Similarly the toxicity of salvarsan in syphilis is at its maximum when the number of spirochætæ is at the maximum—i.e., in secondary syphilis. Increased reactions may therefore be expected in such cases.

McIntosh and his associates hold that salvarsan cannot have any effect primarily or secondarily upon the rigors. These occur as a result of bacterial contamination of the water with or without the presence of salvarsan. Moreover, they do not believe that the toxicity of this substance is increased by the addition of bacterial toxins. In a "normal" individual the toxicity of salvarsan is practically nil, whether bacterial toxins are present or not. Rigors and toxic symptoms occur after the use of microbe-free saline solution. They seldom occur later than the first week or two after the outbreak of the rash, no doubt owing to the fact that, after the first invasion of the system, the great majority of the spirochætæ are rapidly destroyed by natural processes. Further, there are slight clinical differences between the "saline" rigors and those occurring in secondary syphilis after the use of salvarsan dissolved in microbefree saline solution. This latter occurs rather later after injection, the temperature seldom starting to rise for three or four hours. This is in support of the endotoxin view, since it is noted that there is no disappearance of spirochætæ from chancres for four or five hours after injection. There is a latent period first, and then the destruction of the spirochætæ is found to run wholly with the height of the fever, so that by the time the normal limit is again attained no spirochætæ can be detected.

The elimination of the more excessive toxic symptoms by the use of bacterium-free saline solution is a matter of some value, so much so that Professor Ehrlich urges that every one who makes use of these injections should distil his own water. This is undoubtedly desirable. Commercial

distilled water is often grossly contaminated with bacteria, and the difficulties in the preparation of a certainly pure saline solution are sufficiently great to render the transfer of the responsibility of manufacture unsatisfactory. It will be clear that in the absence of toxic symptoms due to the water the slight toxicity due to the salvarsan as such will be more easily borne, and larger doses may therefore be used. For the last six months the writers have never given an adult less than the maximum (0.6 grm.) at one time. Again, the relative contraindications to the use of salvarsan lose much of their importance. The cardiovascular system is not now put to the test in any way so severely as formerly, neither is a diseased nervous system so prone to develop stormy local "reactions." The exacerbations of lightning pains, headaches, and similar symptoms in such patients have been thought to represent a "local reaction" due to the effect of "606" upon the spirochætæ; since using bacterium-free saline solution, however, they have not observed these occurrences. Therefore they consider that the chances and risks attending the treatment of tabetics and general paralytics, if such treatment is considered to have sufficient value, may be appraised less highly than was formerly the case.

It must not, however, be supposed that with satisfactory saline solution salvarsan becomes an entirely indifferent substance in every case; on the contrary, it is now more possible to recognize its own measure of toxicity. Formerly it was the general rule for the toxic symptoms to be less marked after the second or third injection. Now the authors are of opinion that such toxic symptoms as may be met with may become progressively more marked after repetition of the dose at short intervals. This, without doubt, is not the result of any process which may be described as "anaphylaxis," but simply represents the accumulative effect of large doses of arsenic. The symptoms which they have met with are usually most marked in the gastrointestinal system, and it is interesting to note that the recent work of Kochmann has shown hemorrhagic gastritis and enteritis to be the prevailing lesion in animals after fatal doses of "606." These toxic symptoms are by no means invariable, and are extremely rare after first injections.

The practical application of these principles is not devoid of difficulty. In order to insure as far as possible an absence of toxicity, the preparation of the water must be conducted with the greatest possible care. All vessels must be absolutely clean. The water must be collected direct from the still and immediately made into saline solution, and sterilized in the most complete bacteriological sense. When once a flask has been opened the contents must be used at once; remnants cannot be preserved in the ice-chest for future use.

## THE PREVENTION AND TREATMENT OF VENTRAL HERNIA.

JUDD (The Journal-Lancet, March 1, 1912) advises against attempting to remove an adherent appendix through a right rectus incision made primarily for gall-bladder operations. It is better to make the customary muscle-splitting operation in the usual position than to prolong the gall-bladder cut downward and thus sever a nerve supply to the rectus muscle. In pelvic operations the muscles and their sheaths, respectively, should be brought together in the midline.

An incision made through the aponeurosis of the external oblique can be closed with a better degree of strength if the aponeurosis is imbricated. Under no circumstances is a split-muscle incision enlarged by cutting across the fibers of the internal oblique. If the appendix is adherent toward the midline and the exposure is inadequate, the incision is extended through the internal oblique muscle into the sheath of the rectus, not cutting the muscle This will allow retraction of the fibers. rectus nearly to the midline, greatly increasing the working space and at the same time not interfering with any of the nerves, nor will it result in a tendency to weaken the union of the wound. Occasionally the

separation of the internal oblique fibers will be a point too low for the removal of a high-lying appendix, or a cystic ovary or infected tube may be palpated just out of reach of the incision. In either instance there is a tendency in operating to make more room by cutting across the internal oblique muscle. A much better procedure, and one less likely to be followed by hernia, is to extend the incision in the external oblique muscle and make a new separation of the internal oblique fibers either high up over the high-lying appendix, or low down over the ovary and tube, as the case may require. Judd has frequently made several independent separations or splits in the internal oblique muscle, and in none of the cases was the abdominal wall weakened. Hernia rarely follows a suprapubic incision for an operation on the bladder. When it does occur, however, repair is difficult. For this reason, in operating upon the bladder, Mayo (C. H.) makes a transverse incision at a point about an inch and a half above the pubic bone. The sheaths of the recti muscles are cut transversely and dissected off from the bodies of the muscles an inch and a half each way. The muscles are then separated in the midline, but none of the fibers are cut. When the operation is completed in the bladder, the muscles are allowed to drop together, and the cut edges of the sheaths are united by sutures.

Operations for the cure of ventral hernia have been practiced for many years, although it is only within recent years that the results have been to any degree satisfactory. Up to a few years ago the recurrences as reported from the large clinics varied from 40 to 60 per cent, and, moreover, they were attended with a considerable mortality.

To remove all of the scar-tissue and to close the gap in the abdominal wall by approximating the anatomic layers, respectively, would be the ideal method of repairing ventral hernia, but the mere fact that a hernia exists means that there has been a sloughing away, or atrophy, of a part of some one or all of these layers; and for this reason the anatomic closure should not

be considered. Practicing this method in the past gave a high percentage of recurrences, and a mortality which, in all probability, was due to the sudden, marked increase of the intra-abdominal pressure caused by the reduction of the hernia and the diminution of the abdominal circumference by closure under extreme tension.

The majority of these hernias occur in fleshy people, and for many years it has been Judd's custom to devote from two to six weeks' time, if necessary, in preparation for operation. The preparation consists in reducing the weight and getting rid of excessive fat. This is a help in two ways: first, in diminishing the amount of adipose tissue in the flaps to be utilized in the closure; and secondly, in reducing the fat in the omentum and mesentery and thereby lessening the increase in the intra-abdominal pressure at the time of reduc-In a great many instances Judd has been able to reduce the weight twentyfive pounds within four weeks by eliminating all carbohydrates and fats from the diet, and giving a rather effective laxative once a day. During this preparation, which is usually carried on at the patient's home, the patient is given instructions to spend several hours each day in reducing or attempting to reduce the hernia. this may be accomplished by elevating the foot of the bed, and if the reduction can be brought about, the patient is not subjected to the sudden increase of abdominal pressure at the time of operation. very important to bear in mind that the large pieces of omentum and coils of intestine which have been in the hernial sac outside the true abdominal cavity for a long period of time have lost their normal habitat in the abdomen, and that to force them back suddenly might cause very serious

In operating upon abdominal lesions the writer and the Mayos have observed repeatedly the rapidity and strength with which the peritoneum heals. We cannot drain the general abdominal cavity for more than a few hours by a foreign drain of any kind, because the foreign substance

introduced into the abdominal cavity is very quickly walled off from the rest of the cavity by the union of the peritoneal coats of the abdominal organs. An incision through the peritoneal surface of the bladder will invariably close up without urinary leakage, although a suprapubic incision not through the peritoneum, though carefully sutured, will frequently drain urine for a time. Until quite recently it was believed to be necessary to sew the gall-bladder to the peritoneum when doing a cholecystostomy, in order to prevent leakage of bile when the drain was removed. In recent years it has been customary to stitch a tube in the gall-bladder and allow it to drop back to its normal position, knowing that the tube would be completely surrounded by adhesions within a few hours from the rapidly healing peritoneum, and in case the tube should come out, a complete sinus would be made from the gall-bladder to the skin, which would carry the bile to the surface.

It was not until Judd fully appreciated the reparative powers of the peritoneum that he began to utilize it to the best advantage, and as an end to simplify the operative technique in repairing these hernias. For years he and the Mayos have employed the principle of overlapping tissues whereever there was any difficulty in uniting wound edges, and until quite recently this overlapping was accomplished by flaps of fascia after the peritoneum had been closed. It was not an easy matter to dissect the peritoneum from the other tissues, and usually by the time it was freed each flap had been buttonholed and torn in several places, and they could not be closed with any degree of accuracy or strength.

Having observed the marked reparative power of the peritoneum in other locations, it follows naturally that we should adopt the simplest and easiest method to repair these hernias—that is, to make the autoplastic flaps of peritoneum, muscle, fascia, and scar-tissue, as the case may be, and to overlap all of these layers as one flap on to a similar flap of the opposite side. In this way the peritoneum of one flap is ap-

proximated to the aponeurosis and scartissue of the other flap. The method of choosing the flaps and the manner in which they are to be placed must depend upon the individual case. The overlapping may be from side to side, from above down with either flap outside, or it may be placed obliquely. This is a point which should be determined after the hernial contents have been reduced and the flaps measured up.

The steps of the operation are as follows: First, removal of the old skin-scar.

Second, clearing the fat from the fascia for two inches in all directions.

Third, dissecting the neck of the sac free from the aponeurosis.

Fourth, opening the peritoneal sac and freeing the adhesions for at least an inch inside the hernial opening. Under no circumstances is there a sacrifice of any of the scar-tissue or excessive tissue of any kind except the fat.

Fifth, no attempt is made to separate the flaps into anatomic layers, but the most convenient way of overlapping the flaps one upon the other is chosen, the peritoneal surface of one flap lying on the aponeurosis of the other. If the hernia is wide and gaping, several large mattress sutures of linen or chromic catgut are passed through the pedicle of one flap and the free edge of the opposite flap. The peritoneal surface at the pedicle of the overlapping flap is then stitched accurately to the aponeurosis of the opposite flap.

Sixth, the free flap is now allowed to drop on to the aponeurosis of the opposite flap and is stitched accurately in place. Very careful hemostasis is most essential. In case there is any serum or a great deal of fat, it is best to drain either through the end or through a stab-drain.

During the past seventeen years the Rochester clinic has operated upon 242 postoperative ventral hernias. One patient died from acute dilatation of the heart on the second day, and thirteen are known to have had recurrence.

In the ordinary case, fifteen to eighteen days in bed give ample time for healing. It has been the custom to advise against

wearing any truss or bandage which will make direct pressure upon the wound area. It is not believed that an appliance of this kind will prevent recurrence, but rather that it will have a tendency to push apart the flaps which we have imbricated, and that it would also, by pressure, interfere with proper circulation and healing in the tissues. These patients are made much more comfortable, especially the fleshy individuals, by wearing a general abdominal binder which does not make direct pressure at any point.

## MANAGEMENT OF THE OPENING IN THE TRANSVERSE MESOCOLON IN COMPLETING THE OPERATION FOR POSTERIOR GASTRO-JEJUNOSTOMY.

MAYO, WILLIAM J. (Annals of Surgery, March, 1912), notes that the opening made in the transverse mesocolon through which the stomach is brought out posteriorly in the operation of gastrojejunostomy was originally closed by fastening the torn margins with several sutures to the posterior wall of the stomach at some little distance from the gastrointestinal anastomosis. The later omission of these sutures proved to be unfortunate, since in at least one case six feet of small intestine herniated through the opening into the lesser cavity of the peritoneum on the twelfth day, and a second operation was required for the relief of the intestinal obstruction.

For some years the Mayos in performing gastroenterostomy have turned the margins of the opening under and sutured the peritoneum of the lower surface with three or four stitches to the suture line which unites the stomach and jejunum. This technique has proved very satisfactory. There were, however, two cases in which a fat transverse mesocolon sutured in this way caused secondary trouble because of adhesions forming in a collar-like mass around the stoma, and cure was not obtained in either case until the second operation was performed, in which the margins of the transverse mesocolon were dissected free and united to the stomach at a distance of an inch from the suture line of the gastrojejunostomy.

Fastening the margins of the opening in the transverse mesocolon to the gastro-jejunal suture line by several sutures and neatly tucking the edges underneath so there will be no raw surface to become adherent is an excellent practice and suitable in the large majority of cases. In the occasional case, however, in which the transverse mesocolon is quite fat, there is danger that adhesions will form, and this technique should not be adopted in these cases, but rather the old method of suturing to the posterior wall of the stomach three-fourths of an inch away from the gastrointestinal anastomosing suture line.

### WOLFE'S SKIN-GRAFTING.

Evans (Practitioner, December, 1911) states that Wolfe, an ophthalmic surgeon, devised his method for the purpose of supplying a new eyelid. His first patient had very great eversion of the lower lid as a result of an explosion, and the eversion was so great that Wolfe felt sure that no ordinary method would suffice for a cure. He therefore took from the patient's forearm a flap which was two inches in length and one inch in breadth. The graft was laid on the site prepared for it; it soon became adherent, and the result was a great success. Here we have a very good example of the kind of case especially suitable for Wolfe's operation, for a new lid must be firm and vet freely movable.

The cases, then, for which Wolfe's grafts are especially indicated are those in which a firm, thick, healthy mass of skin is required. Next we have to consider how long grafts will survive when cut off from their blood supply. Martin, in 1873, experimented with pieces of human skin, and found that some of them retained their vitality for ninety-six hours even when exposed freely to the air, and that other portions confined in tubes at a temperature a little above freezing point survived for twelve hours longer. It has been definitely shown by these and other experiments that

portions of the human skin may survive for many hours after removal from the living body, and therefore the short interval, generally much under half an hour—in fact, usually only a few minutes—required in operations, is amply sufficient for the implantation of the graft. For its further survival, until it shall have contracted adhesions to the living tissues, the vitality of the graft has been found by practice to be amply sufficient.

The source of the graft has not to be considered. It may be taken from the patient himself, from some part where the skin is loose, so that the edges of the wound made may be easily drawn together. A convenient source is the patient's abdomen, where it is usually not difficult to remove a fold of skin, and yet the wound so made can be readily closed. A very convenient source is the prepuce removed in the operation of circumcision in children; it has great vitality and serves well in cases in which a supple skin covering is needed. Sometimes it will be possible to obtain the grafts from an amputated limb.

When the graft is removed from any other than the patient himself it is essential that every care should be taken to ascertain that the giver of the graft is not suffering from any constitutional disease. taken from young persons appear to have a higher degree of vitality than those taken from the old. The graft must be at least a third larger than the cavity it is intended to fill, and it is well to bevel the edge at an angle of 45°. After the graft has been cut it should be turned upside down and all fat removed from its under surface, but it is important that the under surface should not be injured. The site for the reception of the graft must be prepared. It should be as free from germs as possible, but no antiseptic must be employed. Granulations should be scraped away, and it is well that the base should not be fat. The edge, if hard and avascular, should be cut away, and the edge of the area left should be a little undercut, at about an angle of 45°, so that the graft may fit into it as a watchglass fits into its rim. This will help to

hold the graft in position and will minimize the scar. A few catgut stitches may be inserted if the flap has any tendency to fall from its position, but they must not be tight. A gauze dressing is then applied and gently fixed with a bandage. The writer does not think that rubber tissue is needed for the graft, but if it is used it must be perforated. The surgeon must guard against all undue pressure. The dressing should not be disturbed for ten days or a fortnight, and even then it is generally sufficient to change the outer part of the dressing.

The general health of the patient is naturally of great importance, and no grafting operation should be undertaken if syphilitic manifestations have been present recently or until the disease has been thoroughly treated. Success in the use of Wolfe's grafts depends mainly on care in the choice of the grafts and on avoiding all undue pressure and tension. In suitable cases the results of their employment far surpass the best results from Thiersch grafts.

## TREATMENT OF FRACTURES.

HITZROT (Annals of Surgery, March, 1912) concludes an excellent study of this subject, illustrated by many cases, as follows:

That method of treatment which offers the patient the most satisfactory functional result with the least danger should be the method of election in the treatment of the great majority of simple fractures. method which most nearly fulfils the above requirements is the non-operative reduction of fractures. The more experienced the profession becomes in the handling of fractures the better the results will be. Operation must be considered not the method of election, but the method of selection for a carefully chosen group of cases, and that in selecting the types for operation each case must be considered a law unto itself.

GIBBON in an excellent study in the same issue considers that our aim should be to overcome the indications for open treat-

ment by a perfection of our mechanical measures, and to obtain better results when we must operate by improving our operative technique. He holds, and justly, that there are probably but few surgeons who operate upon fractures with the same impunity and confidence that they perform other surgical operations of an apparently more serious nature. If this is true, it behooves us to know the reason. First, the required mechanical skill is of a different sort from that necessary to the successful performance of most of the surgical operations, even of the most delicate character, and this is acquired only by careful study of the methods in vogue and by much experience; again, more care is necessary in this field than in any other to avoid infection, as we are dealing with a tissue, the medullary portion of the bone, whose resistance is slight; and still further, it may be said that failure of the operation often leaves the patient in a worse state, a greater cripple, than if no operation had been done.

No one realizes these facts more fully than he who does the greatest amount of work in this field, and consequently when we are inclined to imitate his accomplishments we should see that we are equipped at least to some extent as he is. By equipment the author does not mean the special instruments, which are, however, most essential, but rather ability to meet and deal with difficulties, and an aseptic habit and an environment which can be relied upon. If we could feel the same assurance regarding aseptic wound healing in fractures as we do in abdominal operations, half of the difficulties of this work would be overcome. and our results would be ten times better than they are at present.

We are apt to minimize our percentage of infections in any type of operation, but Gibbon asks a careful study of our own cases and the perusal of any honest report by others, and we will then find that this important question of infection takes first rank when it comes to the open treatment of fractures. In a recent article on this subject, Lund, modestly describing himself as a beginner, reports eleven cases in which

he has used the Lane plate, and in four of these he was obliged to remove the plate. If a man of his experience and ability finds this work difficult, it then behooves those with less experience and ability to move in this field of surgery with judgment and precaution.

# OPERATION FOR THE RELIEF OF ELEPHANTIASIS OF THE SCROTUM.

The various operations for elephantiasis of the scrotum which have recently been devised show considerable ingenuity, but their very number suggests the want of one method which is entirely satisfactory. In a recent publication (Finska Laekaresaellskapets Handlingar, November, 1911) Professor Ali Krugius has described a procedure which he found eminently successful after a number of other methods had failed, but he does not claim to have solved the difficulties which various forms of scrotal elephantiasis may present. The patient was a lad of 19, who had developed elephantiasis of the scrotum two years before, when he had been seized with rigor, headache, and general malaise, the cause of which was obscure. The swelling of the scrotum had increased, and had at last forced the patient to keep to his bed.

After several months in hospital there was little improvement effected, although drainage of the scrotum had been attempted by the transplantation of a portion of the saphena vein to the scrotum, within which its lower end was fastened, while its upper end communicated freely with the loose subcutaneous tissue over the pubes. Capillary thread drainage was also ineffective, and after the scrotum had been amputated the skin which had been drawn together over the testicles became so edematous that a new scrotal swelling was formed with embarrassing dimensions.

As a last resort an attempt to drain the swelling by means of the lymphatics of the spermatic cord was decided on, as these lymphatics are not as a rule involved in elephantiasis. An incision was made over the left inguinal canal, through which the cord was exposed and the testicle drawn up.

The tunica vaginalis was divided in front and turned inside out so that its lining came in direct contact with the lymph in the scrotum which it was intended to drain. The eversion of the tunica vaginalis was maintained by its free border being carried up the spermatic cord, to which it was secured by ligatures. The scrotal swelling rapidly grew less, and had almost disappeared when the patient insisted on returning home.

The above operation had been performed for varicocele, but not on the same principles or with the same object. Should there be obstruction to the passage of lymph by the lymphatics of the cord, Professor Krugius suggests utilizing the large omentum, the absorptive power of which is considerable. In order to carry the omentum into the scrotum, a plastic operation would be necessary, by which a strip of the omentum would be cut long enough to reach the scrotum without dragging on the upper attachment of the omentum. This is, however, rather a drastic alternative, as it implies an extensive abdominal operation, and it is therefore only advocated in case of the failure of other and less dangerous methods.—British Medical Journal, April 13, 1912.

#### TREATMENT OF HEART WOUNDS.

Pool (Annals of Surgery, April, 1912) records a case of attempted suicide by means of a stab, exhibiting profound shock, with the pulse imperceptible at the radials, heart sounds indistinct and muffled, increase of cardiac dulness, and a wound half an inch in length in the fourth intercostal space close to the upper border of the fifth rib and just mesial to the nipple. wound was extended along the upper border of the fifth rib toward the sternum, crossing and dividing the cartilage near its insertion. The heart was exposed by a trap-door, incision being carried upward along the sternum, thence outward along the lower margin of the third costal cartilage. The cartilages of the third and fourth ribs were divided close to the sternum, the third being readily exposed by

retracting the soft parts upward. The two cartilages were then carefully lifted, separated from the pleura, and fractured at the costochondral junction, forming a flap with skin and muscles attached. The internal mammary was clamped and ligated above and below when exposed. The opening in the pericardium was enlarged by an incision upward near the sternum, making a triangular flap. Hemorrhage was very free; the operative field was a lake of blood in which were churned bubbles of air. A rent in the heart was found which admitted the tip of the index-finger. It involved the left margin of the heart somewhat posteriorly and half an inch in length. Five stitches were inserted and tied before the bleeding was entirely controlled. Through the drainage tube much clear serum was discharged for several days. Recovery was uneventful.

Attention is called to the fact that there is no distinct clinical picture whereby a wounded heart can always be diagnosed, especially in the first few hours after in-The classical syndrome, "heart tamponade," due to intrapericardial pressure, is more often absent than present. Physical signs in the cardiac region, such as abnormal sounds and increased dulness, are frequently inconclusive, nor are the position and direction of the surface wound always convincing. Prognosis by reason of hemorrhage and shock becomes progressively worse as the interval between the trauma and the operation lengthens. The immediate results of non-operative treatment are very poor as compared with those obtained by operation. Even though the heart wounds heal without surgical intervention. there is always danger of secondary hemorrhage from an unsutured wound, and the spontaneously healed heart wound, even a non-perforating wound, leaves a weak scar which may rupture or become the site of an aneurism.

As to technique careful preparation of the operative field is essential, since many cases which have survived shock and hemorrhage have died later as a result of infection. Experience indicates that anesthesia should consist in the sparing administration of a

general anesthetic, preferably ether, when the patient shows signs of sensibility. The indications for differential pressure are so striking as to induce its employment; it has become possible for every hospital to be provided with facilities for the use of differential pressure, even if elaborate apparatus, such as those of Janeway and Elsberg, are not available. Therefore, the applicability of differential pressure in operations for wounds of the heart will doubtless be thoroughly tested in the immediate future, consequently this detail deserves careful consideration.

A majority of the cases of heart wounds are complicated by opening of the pleura; Sauerbruch puts the figure at 80 per cent. Even if not opened by the original wound, experience shows that the pleura is usually torn during the course of the operation. Pneumothorax with collapse of the lung is therefore likely to occur in every case. But the immediate dangers due to pneumothorax can be eliminated and the late dangers minimized by the use of differential pressure. Therefore, differential pressure permits a disregard of the pleura, and consequently expedites the operation by allowing a free transpleural exposure; moreover, it greatly diminishes the tendency to postoperative infection, by allowing dilatation of the lung and consequent absence of pneumothorax following the operation. Other less important advantages of differential pressure are that it increases oxygenation of the blood, improves the heart action, makes the technique of the heart suture easier in that it lifts the heart and renders it more accessible, at the same time removing the annoying respiratory movements, and, finally, assists in the discovery of a wound of the lung so that it may be sutured.

There are some considerations which indicate great care in the amount of pressure used during the first stages of the operation. Sauerbruch and Haecker found in animal experiments that at first a pneumothorax leads to a diminution of heart activity and lessens the bleeding from the heart. On the basis of these findings Matas

discourages the use of differential pressure until the heart has been sutured, because he considers that a collapsed lung may be an advantage by diminishing the bleeding. But Sauerbruch and Haecker state that in their experiments continuation of the collapsed lung led to such depression of the heart as to render it necessary to dilate the lung in order to save the animal, and Sauerbruch believes that low pressure, such as 3 mm. Hg, does not increase the bleeding. Therefore, although Matas's warning should be borne in mind, it seems probable that differential pressure, in view of its marked indications, may be used throughout with advantage, danger from increased hemorrhage being averted by a rapid exposure and rapid control of hemorrhage, pressure being reduced to a minimum until bleeding has been controlled. Possibly insufflation of oxygen will prove an advantage in this connection, since it can be used under much lower pressure than is necessary to give the same effects with air.

The question of exposure of the heart is greatly simplified if it is recognized that an extrapleural cardiorrhaphy is rarely possible, and if dependence is placed upon differential pressure for controlling the dangers of pneumothorax. The principles of exposure by which almost all indications can be met most satisfactorily are the intercostal incision, the osteoplastic flap, and the extrapleural exploratory pericardiotomy.

The intercostal incision, as Wilms states, affords free exposure of the heart, can be applied more quickly than a flap operation. and causes less hemorrhage, while the resulting pneumothorax cannot be urged against the method since it is rarely possible to avoid its occurrence by other procedures. It should be elected when differential pressure is used, when pneumothorax is already present, or when the condition of the patient makes speed of primary importance. A long intercostal incision placed in the fourth space gives the best exposure, although other spaces may be used. proper application of this incision necessitates opening the pleura freely; forcible retraction then gives considerable exposure.

As in all methods, the internal mammary must be ligated above and below when exposed. After opening the pericardium in the line of incision, if more space is desired, it may be obtained by cutting away part of the sternum and by section near the sternum of adjacent rib cartilages with or without incision of the soft parts upward or downward.

Although the preservation of the pleura, as Rehn points out, is a distinct advantage, it should be aimed at only in selected cases. since the effort delays the operation and The circumstances which usually fails. warrant an effort toward an extrapleural operation are: differential pressure not available, pneumothorax not present, no wound of the pleura such as would render the effort useless, adequate assistance, and relatively good condition of the patient, for when the condition is grave it is important to adopt the simplest and quickest method and to lose no time in attempts at elaborate extrapleural procedures.

Certain flap methods afford good exposure and offer the best prospects of preserving the pleura intact, when such an effort appears indicated. A flap with lateral base has proved the most satisfactory both in operations and experimentally on the cadaver. A flap, as planned by Kocher. gives admirable exposure. An incision of about 10 centimeters is made from the middle of the sternum along the sixth left costal cartilage, which is carefully resected after separating the perichondrium; the pleura is exposed and stripped outward; an extrapleural exploratory pericardiotomy is then possible. From the inner end of this incision, a vertical incision is carried upward on the sternum as far as is indicated. even to the third rib; a third incision of 8 centimeters is carried horizontally outward. A flap of the fifth, fourth, and, if necessary, third cartilages is lifted, separating and stripping the pleura outward. cartilages are broken at the costochondral junction. In the event of a small wound being made in the pleura, an effort should be made to limit the entrance of air into the cavity by protecting the hole with gauze; a large wound must be disregarded. This method not only gives a good exposure but permits satisfactory primary or secondary drainage in a dependent part of the pericardium and the part uncovered by pleura. Yet for some cases it would carry the exposure unnecessarily low. Therefore, in high wounds a simpler and more suitable procedure may be used by omitting the resection of the sixth cartilage and forming a flap appropriately placed with pedicle outward of two or three rib cartilages, especially the fourth, fifth, and third.

In certain doubtful cases the primary incision may be designed for exploration. The original wound, if situated in the precordial region, may then be extended and deepened layer by layer, its edges being excised. If the wound is not in the precordial region, in the absence of differential pressure an extrapleural exploratory pericardiotomy may be used advantageously. For this, resection of the sixth cartilage, as in the first step of Kocher's procedure, is to be recommended. In the rare condition of a wound of the right side with right pneumothorax, the exposure of the heart must be planned to avoid opening the left pleura, especially when differential pressure is not used. Partial resection of the sternum is then indicated.

After exposure of the heart, if any difficulty is encountered in locating the wound, or if hemorrhage is excessive, the method suggested by Sauerbruch and Haecker may be advantageously used: the left hand is inserted so that the right auricle with its entering vessels lies between the third and fourth fingers, while the thumb and indexfinger grasp the lower portion of the heart and luxate it upward; this, they say, serves to bend the vessels and control bleeding. while at the same time the heart wound is rendered accessible. Rehn suggests controlling hemorrhage by compressing the inferior and even the superior vena cava with the fingers of the left hand.

For suturing the heart the interrupted silk suture, well vaselined, has much to commend it, in that it offers a finer material, which causes the minimum of trauma, is well tolerated, allows the knots to be tied more securely, and is not loosened by subsequent softening of the suture material at the knots. In a case of wound of the left ventricle reported by Schoenborn, catgut sutures were used, and were found at autopsy a few hours later so loose that they probably would have given way.

After the controlling stitch has been placed, it should not be difficult in most cases to insert the remaining stitches. In the author's case this was done quite easily by having the assistant draw on the first stitch with one hand and control the bleeding by pressure with a finger of the other hand; for each subsequent stitch this finger was momentarily lifted. It was found impossible to differentiate between systole and diastole in tving the sutures, and case reports show this to be a common experience. The suture should not penetrate the heart wall, yet reports indicate that in thinwalled portions of the heart it is impossible to determine accurately the depth of a suture. Occasionally, as in cases reported by Neumann and E. Hesse, cardiorrhaphy is unsuccessful on account of friability of the heart muscle and persistent cutting through of the sutures. In that case the latter recommends cardiopericardioplasty.

### JEJUNOSTOMY.

Mayo, W. J. (American Journal of the Medical Sciences, April, 1912), regards jejunostomy as an operation of considerable usefulness; it gives rest to the stomach and maintains good nutrition. The operation is an active competitor of gastrostomy in cases of esophageal and cardiac obstruction, and in extensive ulcers which cannot be excised and gastrojejunostomy is not feasible it is a most valuable procedure. In malignant diseases of the stomach of the ulcerous type it offers a means of palliation.

The technique of jejunostomy is simple and easily carried out. The abdomen is opened by an epigastric incision either in the midline or to the left in the rectus muscle. The jejunum is picked up and, selecting a point from twelve to sixteen

inches from its origin, a loop is drawn out of the abdomen, nicked on the convex surface, and a No. 9 (English scale) rubber catheter pushed through the opening down stream until it extends about three inches inside the lumen of the jejunum. point is fixed in position by a single chromic catgut suture; the catheter is then infolded by the jejunal wall for an inch or an inch and a half by mattress sutures of linen after the plan of Witzel. The intestine is anchored to the peritoneum by two or three linen sutures in the lower angle of the incision, which is closed down to the tube in the usual manner, or the end of the catheter can be brought out of a small stab wound at one side of the incision, the intestine being fixed to the peritoneum on the inside by several linen sutures.

Liquid feeding may be commenced at any time and carried out for an indefinite period without danger of leakage and with a certainty that the nutritive material will pass into the assimilative tract. Leakage does not follow the removal of the tube, but if it should slip out accidentally it must be replaced within twelve hours or the tract may become obliterated. All kinds of fluid nourishment are borne well in these cases—preparations of milk, eggs, meat ground fine and mixed with fluid, carbohydrates in fluid form, etc.

In cases of esophageal and cardiac obstructions, and in diseases affecting a considerable portion of the wall of the stomach, rendering gastrostomy impossible or difficult, jejunostomy is as efficient and easier of performance than gastrostomy. It is in extensive ulceration of the stomach that jejunostomy has its greatest field of usefulness. Sometimes the stomach contains multiple ulcers, either simple or specific, in which temporary rest is indicated and gastrojejunostomy is impracticable on account of the extent of the disease. In these cases jejunostomy affords needed rest to the stomach, a condition, it is true, which can be brought about by rectal feeding, but this procedure can in no sense be considered a building up process; it is useful only as a temporary expedient to prolong life.

On the other hand, jejunostomy improves the nutrition of the patient; a gain of from ten to thirty pounds can be easily made without resorting to forced feeding.

In this hypernutrition, with rest to the stomach, lies the secret of the remarkable results following jejunostomy in some cases of extensive gastric ulcers. One sometimes finds a large ulcer of the stomach so adherent and extensive and situated so high in the body as to render gastrojejunostomy not only hazardous, but open to the serious objection that it must be made distal to the ulcer. In such cases jejunostomy is a rational procedure, and even if the ulcer be malignant in character the method furnishes a useful means of palliation.

It sometimes happens, after the excision of a large ulcer of the stomach, that the organ is not in a safe condition to hold food. This is especially true of large ulcers of the posterior wall. The patients are often so debilitated that improvement in nutrition is almost a necessity in order to obtain union. Jejunostomy furnishes an easy, safe manner of giving the stomach rest during the healing process; the patient is relieved of the danger of leakage and adequate nourishment is maintained.

#### TREATMENT OF SEPTIC ABORTION.

(Cleveland Medical Journal, March, 1912) notes that about 25 per cent of abortions become infected, and of these about 10 per cent die. Some abortions terminate spontaneously with complete expulsion of the ovum and the entire decidua. The earlier in the first half of a pregnancy an abortion occurs the more likely is this to be the case. Rest is the only treatment More than half the cases are indicated. associated with hemorrhage or infection. There is no doubt as to the efficacy of cervical or vaginal packs in promoting evacuation of the uterus and checking hemorrhage. But Klengel records that fully one-fourth of abortion cases develop infection when tampons are employed, as against only 17 per cent when no tampons were used, this when the packing was done under the strictest antiseptic conditions. It therefore appears that packing is not altogether a harmless procedure.

There can be no justification in curetting every abortion case without any particular reason for so doing, except that the patient has aborted. It is true, however, that the uterus should be carefully and completely emptied, whether digitally or by means of a blunt instrument, in the presence of a serious hemorrhage, whether the patient is septic or not. In the presence of a virulent infection the expectant plan of treatment offers the best results. Following out this plan of treatment the patient should receive twice daily a hot saline or bichloride douche. The douche serves the double purpose of cleansing the vagina and promoting contraction of the uterus. Ice-bags should be applied to the hypogastrium and the bowels should be emptied. The writer employs elixir of iron, quinine and strychnine as a general measure. He allows a rather liberal diet. The patient is placed in the Fowler position to promote drainage from the vagina. He has had no experience with vaccines or serums, for they do not seem to be recommended in acute septic conditions.

When the temperature has returned to normal or thereabouts and remains so for two or three days, the uterus may be safely evacuated.

### INTRATRACHEAL ANESTHESIA.

Woolsey (New York State Journal of Medicine, April, 1912) notes that we have in tracheal insufflation anesthesia, tracheal respiration with elimination of any possible anoxyemia from external respiratory obstruction, with absence of all embarrassment of respiration, as from differential pressure cabinets we furnish constant minimum dosage of anesthetic vapors at lowest concentration, induce no serious degree of acapnea, provide against hypercapnea and for complete oxygenation; we render intrathoracic surgery possible through prevention of acute pneumothorax.

Thus far this subject has been considered from an optimistic and supportive point of

view; there have been reported, however, and there certainly exist, damaging factors in tracheal insufflation if the technique is in any way faulty. No complicated surgical problem exists, but experience has shown that early efforts were at fault, and only in observing those faults has progress been attained.

Five patients have died, to Woolsey's knowledge, after intratracheal insufflation and more or less serious operative procedures—the first after a tumultuous induction of anesthesia by the hospital interne. relieved by the tracheal tube, the anesthetic being carried on for fifty minutes with satisfaction. After withdrawal of the tube the patient's efforts at respiration were not resumed with a sufficient degree of regularity to prevent anoxyemia, from which he died. Autopsy showed eight-tenths of his lung tissue involved by a general miliary tuberculosis, and the complete aeration of the blood during narcosis must have been carried on with a markedly limited absorbing surface.

The second case was cancer of the esophagus, adherent to the root of the lung glands along the aorta. Through a mistake in technique a small quantity of liquid ether was forced into the air-carrying tube and into the lungs. Death from bronchopneumonia occurred twenty-four hours after operation.

The third case was an uneventful anesthesia, but postoperative pneumonia developed on the fourth day.

In the fourth case the fatality was due to the erroneous introduction of the tube into the left bronchus and because of the temporary discarding of the safety-valve and manometer. The lung was distended to the point of rupture. A similar accident happened in Boston to a case in which, because no safety-valve was used, spasm of the glottis shut off the return flow of vapor without means of noticing the same, and pulmonary rupture was the result. In still another case in which death was characterized by rapidly increasing cyanosis and emphysema of the tissues in the anterior part of the neck, it is supposed that

there must have been an abrasion of the tissues in the neighborhood of the glottis, with resultant interstitial emphysema of an obstructive nature.

Two methods of introduction of the tube have been in use—that of direct inspection through a Chevalier-Jackson laryngoscope, and by means of a specially constructed introducer in which the tube is threaded through a tunneled urethral sound with an O'Dwyer curve to hook over the arch of the tongue; the tubation of the trachea being done in a manner similar to intubation for diphtheria.

The tube should be 22 F. for most adults, occasionally 24 in thoracic cases, to insure a return flow of air not too great for the maintenance of sufficient intrapulmonary pressure. If the tube is so small as not to provide for sufficient pressure to keep the lung inflated when the chest is open, according to the suggestion of Meltzer pressure just below the thyroid notch every few minutes will remedy the defect. The point for pressure is not above the thyroid notch nor below on the trachea, but at the middle of the thyroid cartilage.

The principal features of any practical insufflation apparatus are the air supply, either a foot-pump or electric motor or both, a water-containing reservoir through which the air passes, an ether-containing reservoir over or through which the air passes to obtain its varying percentages of ether, a safety-valve and manometer which registers the internal pressure of the apparatus and of the lung and allows exit to any increase of pressure above a definite point. filters, air warmers, etc., add to the luxuries of perfection and seem advisable. original apparatus as used by Dr. Meltzer was simple indeed compared to modern developments, and though such simplicity has its faults, compactness of apparatus and limited cost are desirable.

Tracheal insufflation is particularly serviceable in intrathoracic cases in which it is positive intrapulmonary pressure prevents acute pneumothorax; in that class of cases in which the obstruction to breathing exists in the airways between the teeth and

trachea from collapsed alæ nasi, recedent jaw and tongue, paralyzed soft palate and glottis, and in which narcosis is ordinarily maintained despite serious anoxyemia.

In those subjects whose factor of safety is lowered by age, disease, etc., the grave risks of surgery, in whom the minimum dosage and perfectly laborless respiratory exchange of tracheal insufflation draws less than other procedures on the narrow margin of safety that such cases possess.

In all operations about the oral or nasal cavities of serious nature where aspiration of blood and tumor material would be a dangerous factor.

Woolsey has particularly devoted himself to utilizing nitrous oxide and oxygen through the tracheal tube. These two gases are becoming more and more efficient as general anesthetic agents as the elements of light positive pressure and reduced continuous flow of gases are introduced into the technique of their exhibition.

Boothby and Cotton of Boston reported the first and only case of narcosis by the use of nitrous oxide and oxygen intratracheally.

This suggested to Woolsey the possibility of utilizing these agents by the tracheal route. Nineteen have been thus anesthetized with ether initiation, and varving quantities of ether in the first six or seven. Finally with less ether until, after the initiation of the narcosis with ether and a small amount to deepen the anesthesia at the very outset of the narcosis, the rest of the operation has been carried on under nitrous oxide and oxygen alone. No intrathoracic surgery has been attempted under this form of narcosis. The apparatus approved has been a simple crude two-bottle affair, one bottle containing water, a mercury manometer and safety-valve in its rubber cork, and three afferent tubes, one for the conveyance of air from the footpump through the water, the second for nitrous oxide, the third for oxygen. One efferent tube conveys the gas after it has bubbled through the water over to the second bottle, that for ether. A valve on the top of the ether bottle provides for the

stream of air or nitrous or oxygen, as the case may be, going either all through the ether or all direct across, or any proportion either way. This allows the air to pick up as much or as little ether as is desired, or none, and likewise the mixture of nitrous oxide and oxygen to take up the amount of ether necessary. When air is not in use a stop-cock on the air afferent tube must be turned off in order to prevent the extremely disconcerting accident of all the water from the bottle backing up into the pump.

# LEG AMPUTATIONS FROM THE STANDPOINT OF UTILITY.

THOMPSON (Virginia Medical Semi-Monthly, March 8, 1912) on the basis of an experience obtained in the National Soldiers' Home states that the most satisfactory legs to-day are made of willow. They hold their shape forever and are lighter than those made of any other material. The first leg worn should always have a thigh corset attached, not so much to assist the stump in bearing the weight of the body as to guide it in its socket and to relieve it of side strains. The ideal stump is seven to eight inches in length, large at the joint and rapidly tapering toward the end. It should be free from all adhesions. the skin being movable at all points, and containing as little scar tissue as possible, and that only on the end.

Many of the methods devised for amputating are entirely unsuited to the wearing of an artificial leg, and are therefore to be avoided by the modern operator.

Circular skin flaps have been used. With this flap a smooth end is impossible. There will be considerable puckering at the edges and adhesions at the center will most likely occur.

A large posterior skin flap, while it gives a smooth end has this marked disadvantage: The line of union will extend across the tibia just above its end, and the skin of the flap being considerable thicker than that to which it is united, a marked ridge will be the result. The skin covering the tibia, above all other portions of the stump, must

be free from scar tissue. The posterior muscle flap has all the disadvantages of the posterior skin flap, besides giving a large flabby stump at the very place where it should be smallest. If a stump is larger at the end than it is a short distance above, a pulling sensation will be experienced each time the artificial foot is raised from the ground.

The operation which gives the best stump from the standpoint of utility is the bilateral skin flap. The incision should begin about seven inches below the knee-joint and one inch external to the crest of the tibia, ending about one-half inch internal to the median line on the posterior surface, the internal flap being slightly longer than the external. By following this procedure, the line of union, instead of extending across the end of the tibia, will lie between the ends of the two bones, thereby reducing to a great extent the tendency toward adhesions at this important point. The flaps, consisting of skin and subcutaneous tissue, should be dissected back to the point of the beginning of the incision and the muscles divided straight across.

Periosteal flaps should be made for both bones, the tibia finally being amputated on a line with the muscles, the fibula about one-quarter inch higher up. Care should be taken that the edges are smooth and that the internal and anterior edges of the tibia and the external edge of the fibula are slightly beveled.

The arteries being ligated with ten-day catgut and the nerves pulled down and divided as high as possible, the wound is then closed with interrupted sutures. Drainage consisting of a few strands of catgut or a very small wick of gauze should be inserted for about one inch in the posterior end of the wound to prevent the possible formation of clot. This may be removed about the second day, the stump being kept in an elevated position for one week.

The healing of the wound by first intention is imperative. By using the utmost precaution to prevent sepsis and clot formation this result can be readily obtained, and the percentage of adhesions will be very small.

This operation is not a hard one to perform, and can be done well by any surgeon who can do any other operation well.

# A PLASTIC OPERATION PROVIDING A NEW SPHINCTER ANI.

MANTELLI (Giorn. d. r. Accad. di Med. di Turin, 1911, lxxiv, 347) treated a patient who was in a wretched condition with widely patent anus incident to operation for fistula by forming a new sphincter. With the patient on his face and his thighs widely abducted two incisions were made, each starting at the level of the coccyx and two fingerbreadths outside the middle line, descending vertically 4 inches, then running down and out to the linea aspera about four fingerbreadths below the summit of the great trochanter. The lower and internal borders of the glutei maximi were then carefully exposed, and from them were isolated stout sections, the thickness of a large thumb. These were separated from their insertions into the linea aspera and up to the point where the nerves supplying them entered. The skin around the anus was then tunneled freely, leaving bridges of skin to the right and left, and two skin bridges in front and behind. The new sphincter was then formed by passing the section of the right gluteus through the posterior tunnel and round the left side of the anus; the strip of left gluteus was similarly passed through the posterior tunnel and round the right side. Thus the two strips crossed behind the anus, and their free ends were sewed together inside the tunnel passing in front of the anus. The cutaneous incisions were then sewed up with silk. A month later the patient had a completely continent sphincter, and four months after the operation the anal function was normal.

Great care was taken not to injure the isolated strips of the glutei during the operation; many vessels bled and had to be ligatured. The author points out that Schömacher did not make the two strips of

glutei cross each other; so that the sphincter produced by such an operation would naturally be less efficient than Mantelli's. In addition, Schömacher's operation demanded that the two muscular strips should be sewed together in two places, behind and before, thus increasing the injuries to which they are necessarily exposed in the operation.—British Medical Journal, April 20, 1912.

### TILTING THE SOLES OF THE BOOTS, AND ITS USE AS A MEANS OF TREATMENT IN VARIOUS COM-MON CONDITIONS.

COTTERILL (Edinburgh Medical Journal, February, 1912) contributes an article on this subject because he believes that it is not as widely known as its merits deserve, and also because the application of the treatment is very simple and yet extremely efficacious. An external wedge is used at times for intoeing and an internal one for outtoeing. Mr. Robert Jones applies separate wedges to the heel and sole, raising the whole length of the heel, but only applying a small wedge to the sole so that the flexibility of the part is not interfered with. Instead of completely filling in the waist where the ordinary short heel does not sufficiently support the foot the heel is lengthened, and, if necessary, at the same time slightly broadened or skewed on the elevated side. The sole and waist of the boot should be hammered on an old iron last and should not be allowed to take a convex shape. With this modified form of boot, without the filled-in waist, it is essential that it should be made of strong leather, as there is a considerable tendency for it to sag after the heel has been crooked. The thickness of the wedge varies in different cases from one-eighth to one-third inch, though a quarter-inch wedge, if properly applied, is usually sufficient.

The effect of raising the outer side of the boot is to throw strain of the body weight somewhat inward while the patient is standing, and by making him walk, as it does, with the toes turned out, the line of strain in walking is also inclined toward the inner part of the foot. For this same reason—that the patient walks with the toes turned out—the external lateral ligaments of both ankle and knee are relieved of strain and the body weight is largely borne by the outer half of the knee-joint. The raising of the inner side of the boot relieves the internal lateral ligaments of ankle and knee, and the body weight is transmitted mainly through the inner half of the knee-joint.

The foot is a sort of compound lever made up of a number of parts connected together by what are practically hinge joints, whose axis of movement is, roughly speaking, in the long axis of the foot. To preserve the full action of these hinge joints it is obvious that the line of strain. or, in other words, the direction of forward movement of the body, must correspond fairly nearly with the line of the long axis of the foot; any marked deviation between these two lines will throw some of these joints more or less out of action, and will put an untoward strain on those still left in use. If the deviation is great the gait will become stiff, owing to the fact that the hinge action of most parts of the foot is in abeyance. Apart from the effect the position of the foot has on its movement, it must be remembered that all parts of the arch of the foot are not equally adapted for strain, for the inner side is mechanically less able to bear weight than the outer.

As the result of experiments it has been found that, taking into consideration the movements of the parts and the capabilities of the different parts of the arch to bear strain, the ideal line of strain should pass from the center of the heel approximately through the head of the third metatarsal. Though progression is, in sum, directly forward, the body actually swings slightly from side to side as the weight is thrown successively on to each foot, so that the line of strain or direction of swing is somewhat divergent in the two feet.

## REVIEWS.

DEVELOPMENTAL PATHOLOGY. A Study in Degenerative Evolution. By Eugene S. Talbot, M.S., D.D.S., M.D., LL.D. With 346 Illustrations. Richard G. Badger, The Gorham Press, Boston, 1912.

The volume comprises an introduction and twenty-eight chapters. The range of discussion embraces fundamental. might say primitive, facts upon which a towering superstructure of speculative hypothesis is constructed. The data, evidently intended to be basal, are often vaguely presented and are not without errors: for example (p. 6), the human ovum is said to be "typically multicellular." The chapter headings do not represent the matter considered and need not be given in detail. The chapter entitled "Development of Man" should have been called "Phylogeny and Ontogeny." The several chapters dealing with the head, and especially with the facial bones, are better balanced and clearer than the others. The attempt to trace malformations to the influence of some subtle undefinable quality called, for want of a better term, "stress," and the further effort to establish certain periods of stress, do not appeal to the reviewer as making for clearness. An error all too common in modern medical writing is to name a thing, often itself a purely hypothetical body, and to proceed with the argument as though the mere act of naming had settled the matter. By this method inordinate speculation rises to the dignity of hypothesis, and theory, often feebly grounded, appears as established fact. To say (p. 107) that an unstable nervous system (whatever that may, be) "is one not properly developed or weakened" is simply to apply words without using them. Again we are told (p. 129) that overdevelopment may cause similar instability. It is stated (p. 108) that disease of the pituitary results in either dwarfism or giantism; one might as well say that disease of the thyroid results in

manifestations of hypothyroidism or of hyperthyroidism. Neither statement is in full accord with known data. It would be interesting to learn upon what basis the author rests his statement (p. 109) that alcohol exerts a deteriorating influence on the ovaries and testicles. The alcoholic becomes the alcoholist (p. 110), and the influences of alcohol and opium on the evolution of the race and of the individual are dogmatically stated. There is some consolation in the suggestion that laziness is a degenerative tendency; employers of labor have feared that it was evolutionary. Then we are further shocked by the assertion that (p. 153), "strictly speaking, every individual is a degenerate." The flat-footed man is a degenerate and is cast into the anthropoid ape stage (p. 151). Certain developmental defects involving the intestine are classed (p. 147) under "degeneration of the bowels." Illustrations (original) of a "murderer," "a successful lawyer," "an actor," and of "smart," "eccentric" and "fairly intelligent" "business men" are introduced to "prove" assertions in the text. The chapter on "Pus Infection" (p. 259), the use of the term osteomalacia (p. 247), and the summary (p. 271) on pus production in interstitial gingivitis are superior examples of pathological speculation and inexactness.

That the work abounds in what might have been deleted or better not said is evident; there is, however, much that is true and some that is of value. The relation of facial, and particularly of jaw and palate, development to mentality needs careful study and sober discussion; the problem merits a philosophic view less discursive than but nor far afield from what the present volume is presumably intended to contain. More fact—true facts—extended investigation of cases, and less speculation would have added to the value of the work.

W. M. L. C.

THE CARE OF THE INSANE AND HOSPITAL MAN-AGEMENT. By Charles Whitney Page, M.D. Boston: W. M. Leonard, Publisher, 1912.

The author has presented the subject of the modern care of the insane in a small volume but in a very attractive form. The subject is treated as follows: The nonmechanical restraint of the insane, the constitution of the boards of trustees of hospitals and their duties, the qualifications of the hospital superintendent and assistant physicians, the "non-restraint" care of patients, and the question of the attendants These subjects are all disand nurses. cussed on a high plane and all from the point of view of the grave moral responsibilities which the care of the insane implies. The necessary qualifications of the nurse are considered in detail. We are disappointed, however, in not finding such practical questions discussed as, for instance, the proportion of nurses to patients, nor a detailed consideration of the actual course of training, lectures, etc., such as is pursued in modern training schools. Admirable as this little volume is, we feel also that the emphasis placed upon non-restraint is rather belated and may perhaps inadvertently give rise to an incorrect impression, for the present age has been preëminently one of non-restraint.

The author deals largely with generalities, and we find no discussion of such practical questions as the classification of patients in the various wards, character of clothing, food, expense of maintenance, etc. However, the author may not have considered these subjects within the proper scope of his book.

F. X. D.

PSYCHOTHERAPY. By James J. Walsh, M.D., Ph.D. New York and London: D. Appleton & Company, 1912.

The volume before us consists in reality of a treatise upon the practice of medicine; all subjects are alike considered, from functional neuroses to typhoid fever, cancer, and arthritis deformans. It would be unjust to infer that the author relies exclusively upon psychotherapeutic methods in treatment. An examination of the pages reveals the fact that other methods of treatment are considered in addition to suggestion. The

author discusses in full the various forms of suggestion, mental healing, mind cures, faith cures, etc. In his discussion of hypnotism we are relieved to note that the author believes "there is no justification for its habitual use." We are somewhat disappointed at the brevity with which the subject of psychoanalysis is treated. While it is probable that psychoanalysis—at least the psychoanalysis of the Freud school—will not remain with us permanently, its present prominence would justify a more extensive consideration than that given to it by the author.

The danger of the employment of psychotherapy is that which attaches to all forms of special treatment, namely, the exclusion of other methods, physiological, medicinal, mechanical, etc. This we believe the author has endeavored to avoid, though like almost all writers upon special subjects, he—with perhaps pardonable enthusiasm—overemphasizes the importance of the method of which he treats.

SALVARSAN IN SYPHILIS AND ALLIED DISEASES. By J. E. R. McDonagh, F.R.C.S. The Oxford University Press, New York, 1912. Price \$3.00.

Although a number of brochures have been published by those who are interested in salvarsan from the commercial standpoint, and myriads of articles have appeared in medical journals concerning this substance, there is room in medical literature for just such a volume as that now under notice. The object of the writer is to describe salvarsan and to relate its history and that of its forerunners, to explain the method of its injection, to estimate its potency as a specific against the spirochæta pallida, to state with impartiality what it does do and does not do, its uses and abuses, and to demonstrate these facts by actual cases cited in arriving at an accurate estimation of its value. As the author points out, salvarsan like all other new remedies has passed through the stage of its extravagant laudation and extravagant abuse. The volume is excellently prepared from the publishers' standpoint and contains a number of colored plates which are unusually good both in execution and be-

cause they represent actual clinical conditions. It is to be remembered that the book does not deal alone with the use of salvarsan in syphilis, although of course by far the greater number of pages is devoted to this subject, but also has a chapter discussing its use in other parasitic diseases such as malaria, recurrent fever, sleeping sickness, filaria, and bilharzia. The author is very positive in his belief that salvarsan is not deleterious to the optic nerves and tracts, and equally positive that in the early stages of syphilis it is an absolute specific. Of course in the later stages when parasyphilitic conditions are present and actual degenerations have taken place, it is impossible for any remedy to exercise the effects which it can produce when used early enough to actually combat the infection.

COMMON DISORDERS AND DISEASES OF CHILDHOOD. By George Frederic Still, M.A., M.D., F.R.C.P. Second Edition. The Oxford University Press, New York, 1912. Price \$5.50.

Dr. Still, who is Professor of Diseases of Children in King's College, London, is well known to general practitioners and specialists in diseases of children in this country and abroad for the excellent work which he has done in the diseases of infancy. As Physician to the Great Ormond Street Hospital for Sick Children of London he has unusual clinical opportunities. The title of his book, which is rather an unusual one, conveys the main purpose which the author had in mind, namely, to deal with the common diseases of childhood, not to the exclusion of the rare ones, but with the idea of recognizing the fact that it is the common diseases which are of most interest to general practitioners. Special attention has been given by the author to the development of diagnosis and treatment, and where pathology and morbid anatomy aid in diagnosis and treatment, sufficient details are given concerning them to make the diagnosis comparatively easy and the treatment accurate. We are glad to note the strong emphasis which he puts upon the importance of breast-feeding of infants in distinction from bottle-feeding.

The author states that taking haphazard thirty cases of convulsions in infants under nine months of age he finds that twenty were entirely hand-fed at the time of the convulsions and only eight were entirely Other statistics of a similar breast-fed. nature are also quoted. As is proper in a book of this kind, much attention is given to the matter of infant feeding when artificial means are essential, and minute details are given as to the drugs which should be used when they are indicated. These prescriptions are evidently those of an active practitioner who uses his formulæ from day to day with sufficient success to lead him to believe that they are The book serves to useful compounds. maintain Dr. Still's reputation and will certainly continue to be popular.

MASSAGE AND SWEDISH MOVEMENTS. By K. W. Ostrom. Seventh Edition, Revised and Enlarged. Illustrated. P. Blakiston's Son & Co., Philadelphia, 1912. Price \$1.00.

This is a small handbook of about 200 pages written by a practical masseur in order to inform students of massage and physicians as to the Swedish movements and as to the use of massage in the treatment of disease. In other words, it informs physicians what may be done by these measures along legitimate lines without claiming for either massage or Swedish movements the ridiculous basis upon which rests the opinion of many quacks concerning their advantages. It is probably true that regular physicians give too little attention to Swedish movements and massage and thereby aid in driving their patients into the hands of charlatans, who are only too ready to make excessive claims for their methods.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart A. Hare, M.D., Assisted by Leighton F. Appleman, M.D. Volume II, June, 1912.

This issue of Progressive Medicine contains, as have other issues, in the quarter ending the month of June, articles upon Hernia by Dr. William B. Coley, of New York; the Surgery of the Abdomen, Ex-

clusive of Hernia, by Dr. John C. A. Gerster, of that city; Diathetic and Metabolic Diseases, Diseases of the Spleen, Thyroid Gland, Nutrition and Lymphatic System, by Dr. Alfred Stengel; and Ophthalmology, by Dr. Edward Jackson. The object of each author to present in his article the important advances made in these departments during the previous twelve months has been successfully carried out, so that the surgeon or physician has placed in his hands correct information which he can readily employ in practice, and this information is added to by the personal criticisms or suggestions of the contributor who writes upon his special line.

THE PRACTICAL MEDICINE SERIES. Edited by Gustavus P. Head, M.D., and Charles L. Mix, A.M., M.D. Volume I, General Medicine, Edited by Frank Billings, M.D., and J. H. Salisbury, M.D. The Year Book Publishers, Chicago, 1912. Price \$1.50.

As our readers probably know, this volume is one of ten which is brought out annually by its publisher, each volume dealing with some department of medicine. It is quite freely illustrated and consists chiefly in a series of abstracts well chosen from current medical literature.

CLINICAL METHODS. A Guide to the Practical Study of Medicine. By Robert Hutchison, M.D., F.R.C.P., and Harry Rainy, M.D., F.R.C.P. Copiously Illustrated in Black and White and Colored Plates. Fifth Edition, Revised. Cassell & Company, New York, 1912. Price 10s. 6d.

We welcome the appearance of the fifth edition of this excellent little manual, which, though it contains some 650 pages, is nevertheless small enough to fit in the side pocket of a sack coat. Five editions have appeared since September, 1897, and each time the authors have had sufficient pride in their work to bring the volume up to date. We do not know of any book which contains so much excellent material in so small a space and yet at the same time so successfully avoids the charge of being incomplete. Not only does it deal with ordinary physical diagnosis, but with the urine, the skin, the eye, ear, nose and throat, clinical examination of children, and the examination of pathological fluids. The final chapter is upon clinical bacteriology, and this is followed by an appendix in which various formulæ are given as to standard solutions which are used in the clinical laboratory. The colored plates, of which there are thirteen, are excellent.

SURGICAL AFTER-TREATMENT. By L. R. G. Crandon, A.M., M.D., and Albert Ehrenfried, A.B., M.D. Second Edition, Revised. Illustrated. W. B. Saunders Co., Philadelphia and London, 1912.

Postoperative treatment is an alluring title to all surgeons, nor should any individual be content to classify a book thus named and written by responsible and experienced men without something more than a hasty glance at the table of contents and a perusal of a page or two bearing upon the topic of special interest to the reader at the instant. The book has been written for house surgeons in hospitals and general practitioners in communities which are not surgical centers, and the authors state that every procedure advised has stood the test of practice and will safely do for the reader until, from his own experience, This is in he develops his own methods. the main entirely true. It would have been well to have mentioned under the subheading of Restlessness Following Operation that this condition is one of the most significant early ones of hemorrhage. Under Sweating to have called attention to the difference between the florid sweat and the pallid sweat. The directions in regard to thirst are excellent, and Sexton's apparatus for Proctolysis receives the commendation which it deserves. The subcutaneous saline infusion is so generally substituted by proctolysis or in case of urgent need by the intravenous injection that this circumstance seems worthy of The technique of Transfusion is described in minute detail. Shock is discussed from the physiological standpoint, and the theory of the exhaustion of the vasomotor center is rejected. He has, however, none better to replace it. treatment is described in most satisfactory detail. The subject of Diet after Operation and Lavage, Care of the Bowels and

Acute Intestinal Obstruction, including Acute Gastric Dilatation, Postanesthetic Pneumonia, Acetonemia, Bandaging, Drainage, Bier's Hyperemia, Bismuth Paste, Habits and Their Relation to Surgical Conditions; Postoperative Psychoses; Bedsores: Causes; Prevention; Treatment; Artificial Limbs; Preparation of the Pa-

tient and the Surgeon; Operation on the Neck, the Chest, and the various Organs—these are considered from the standpoint of one who has to deal with all the minute details of after-treatment which is often quite as important as is operation in itself. To one lured by the title of this work the subject-matter will thoroughly commend it.

## CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The Royal Society of Medicine is now housed in its new home, and the building was formally opened by His Majesty the King. Replying to an address of welcome the King congratulated the Society on the way in which its needs had been provided for, so that its varied functions could now be carried on unhampered by lack of space. Their majesties then made a tour of the building and congratulated the members of the building committee on the result of their labors.

A bill for the better control of feebleminded persons is now before Parliament. This bill enables the Lunacy Commissioners to license institutions for the purpose of the detention of persons certified as feebleminded, and empowers magistrates to commit persons certified as such to these institutions. The object of the bill is to prevent the increase and propagation of half-witted people and degenerates. The Home Secretary acknowledged that the subject is one demanding immediate attention and said that the government was prepared to provide a yearly sum of money to finance suitable homes. He pointed out that to many of the feeble-minded the greatest misery of their lives was the responsibility of liberty, but that kept under protection and with suitable conditions they led happy lives. Owing to the extremely congested state of the government programme it is very doubtful if the bill will get far this session, but in the interests of the community it is to be hoped that the House of Commons will find time to give as much attention to the subject as it deserves.

The whole question of the physical and mental improvement of the race will be threshed out at the first International Eugenics Congress to be held at London University the last week in July. At this meeting an attempt will be made to define what practical steps can be taken toward this end. As all the various schools of heredity intend to send representatives we may anticipate some very interesting discussions. The general public still regard the subject of eugenics with grave suspicion, and believe that the regulations to be enforced will restrict the liberty of the subject. Of course the great difficulty will center in the definition of a mentally defective person, as there is always the chance of grave injustice being done to persons of slow mentality but who are not actually defective. If, however, care were taken to include only a very low grade—i.e., persons who are obviously hopeless and incapable until more experience in the subject is gained, this pitfall ought to be avoided.

A libel case involving rival theories as to the causation of cancer has just been concluded in the Law Courts. The plaintiff, Dr. Robert Bell, wrote a book in which he described his conception of the causation of cancer, and in which he also gave a description of his methods of treatment. He then proceeded to attack other theories and methods of treatment in unequivocal language. The defendant, Dr. Bashford, the superintendent of the Laboratories of the Imperial Cancer Research Fund, met this attack by asserting in an article in the British Medical Journal that "the plaintiff wrote his book for personal gain or from vanity or ignorance." This article was published in a special number devoted to the topic of "Quacks and Quackery." In his book Dr. Bell, who is a properly qualified medical practitioner, contends that cancer is a preventable disease and is primarily due to a disordered condition of the blood, induced through the overeating of meat and other forms of flesh, and especially of dead or cooked tissues. He therefore advocates the adoption of a more vegetarian diet, consisting of raw fruit and vegetables, supplemented by living animal tissues such as milk and eggs. He also asserts that by the microphotography of the blood he can tell if the patient is cancerous or not. In the result the jury returned a verdict for the plaintiff and awarded Dr. Bell £2000 in damages. This verdict was received with applause. The verdict of the jury does not in any way indorse Dr. Bell's views as to the cause and treatment of cancer, but may rather be taken as due to a feeling on the part of the public that no honest investigation into the causes of such an obscure disease as cancer ought to be checked by unfair criticism because it has wandered from the paths of orthodoxy:

The medical officer of health for Walsall has drawn attention in his annual report to the results of the efforts made in our elementary schools to keep up a good average attendance. He considered that the spread of infectious illnesses was largely due to this pressure, as children who were aspiring to a medal for perfect attendance continued to attend school when they would have been better in bed. He had also noticed that during the delirium of illness, among a certain class, the topics were always school work or school attendance.

Although the water supplied to Londoners in late years has always been of excellent quality the Metropolitan Water Board are determined not to rest on their oars. One of the most important works now being constructed is the Chingford reservoir, which will probably be completed this year. This new storage will have a capacity of about 3,000,000,000 gallons, and the pumping machinery will be capable of passing over 200,000,000 gallons per day from the reservoir into the mains. This

new reservoir will contribute to the supply of the whole of London, as under the scheme of federation all the sources of supply are linked up by means of great mains and the water "pooled" among all the districts of the metropolis. Although the capital's demands for water are constantly increasing, the possibility of a water famine is extremely remote, thanks to the foresight of the Metropolitan Water Board.

The battle of the sites for London University still goes on, and the latest news is that offers of donations amounting to £300,000 have been withdrawn. It is stated that "the donors are getting restive" at the long delay in deciding upon some scheme. Various schemes have been pushed by different parties, but the Senate has now decided to set about selecting a site and raising the necessary money. The site that will offer the greatest possibilities from an architectural point of view is one on the south bank of the Thames close to Westminster Bridge, but it is possible that this position may not be considered sufficiently convenient, as most of the colleges affiliated with the University are situated on the north bank of the river.

The Royal Hospital at Chelsea was recently honored by a visit from the King and Queen, who spent a considerable time inspecting the pensioners and examining the buildings. This ancient hospital was founded by King Charles II., and in honor of the occasion the statue of the founder was decorated with oak foliage. The hospital is situated in spacious and picturesque grounds stretching down to the banks of the Thames, and here a large number of veteran soldiers and sailors pass the remaining years of their lives amidst pleasant surroundings.

The progress of the Homeric fight between Mr. Taft and Mr. Roosevelt is being watched with considerable interest on this side of the Atlantic. The intricacies of the electoral procedure are somewhat difficult to follow, but the accounts of the preliminary skirmishes are very racy, and compared with them our own political elections seem but tame and dull affairs.

# THE THERAPEUTIC GAZETTE

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## ORIGINAL COMMUNICATIONS.

# THE DIFFERENTIAL DIAGNOSIS BETWEEN BRAIN ABSCESS AND SINUS THROMBOSIS, AND THE TREATMENT OF THESE CONDITIONS.<sup>1</sup>

BY EDWARD BRADFORD DENCH, M.D., Professor of Otology, University and Believue Hospital Medical College, New York City.

I desire to speak to you in the time allotted me upon a subject of the utmost importance. I am going to ask you to give me your attention while we consider some of the intracranial conditions which may follow a middle-ear suppuration. The time is too short for me to consider the entire subject of the intracranial complications of middle-ear suppuration, and I would therefore call your attention to but two of the sequelæ which may follow a suppurative process within the middle ear, namely, the development of an abscess within the brain substance or a thrombosis of the lateral sinus.

The frequency with which intracranial complications occur in middle-ear suppuration is rather astonishing. In some statistics which I compiled a number of years ago, of 10,000 cases of middle-ear suppuration, it was found that one patient in every 88 suffered from some intracranial complication. The importance, therefore, of always bearing in mind the possibility of involvement of the cranial contents in every case of middle-ear suppuration cannot be too forcibly impressed upon a body of medical men.

The differential diagnosis between various intracranial complications is one fraught with considerable difficulty, and I am going to call your attention this morning to some points which enable us to

<sup>1</sup>A lecture delivered before the Senior Class of the Jefferson Medical College, Philadelphia, March 25, 1912.

differentiate between two of the most important of these lesions, namely, abscess of the brain and sinus thrombosis. In order to bring out clearly the differential points, it will be well to consider the two conditions separately, and then to emphasize their points of differentiation.

Remember that in brain abscess we have two sets of symptoms-first, those depending upon a localized collection of pus, and secondly, certain localizing symptoms, dependent upon the particular situation of this purulent focus. Those symptoms depending upon a localized collection of pus stages: (1) the stage of infection or priusually express themselves in three distinct mary involvement; (2) the latent stage; and (3) the terminal stage. When the brain substance, either of the cerebrum or the cerebellum, becomes infected, the first symptoms are those which might characterize the infection of any of the soft structures in any part of the body—that is, we have a sudden and abrupt rise of temperature, an increase in the pulse-rate, and a certain amount of general malaise. The temperature ranges ordinarily from 101° to 103°, seldom higher than the latter figure, and the pulse-rate is usually proportionate to the temperature elevation.

This rapid pulse-rate is present only in the early stages. Even in an acute abscess the rapid pulse is soon succeeded by a slow pulse, and this, I think, is one of the important signs which enable us to differentiate a brain abscess from some of the other intracranial complications.

These symptoms are present whether the cerebrum or the cerebellum is affected.

Confining ourselves for a short time exclusively to these general symptoms, we will find that in cases unrecognized in this early stage, this temperature will persist for from two to ten days; then the temperature will gradually subside, the pulse will become less frequent, and a period of latency will ensue, during which time the temperature will remain either approximately normal or even subnormal, and the pulserate will be either normal or reduced in frequency. This latent stage of a brain :abscess may last either a few weeks or may continue for a number of years. Following this we have the terminal stage, in which the symptoms may be either local, depending upon the presence of the abscess within the cranial cavity, or general, depending -upon a sudden rupture of the focus into the ventricles, and a diffusion of the septic material into the general circulation.

Going into the symptomatology of brain abscess more in detail, there are certain signs which are indicative of intracranial inflammation, no matter where this inflammation is located. These are headache. vomiting, muscular paralyses, and choked disk. All of these symptoms may depend upon the presence of an inflammatory lesion within the cranial cavity, and yet do not enable us to determine either the locartion or the nature of the intracranial inflammation. Headache is a symptom which is present in all cases of brain abscess, and if persistent is one which must be looked upon with suspicion in every case of middle-ear suppuration. A persistent headache. in a case of acute inflammation of the middle ear, always suggests to me the possibility of early intracranial involvement. In brain abscess, either in the early or latent stage, this headache may not be severe. In the early stages it is apt to be of considerable severity. One feature which characterizes headache, due to brain abscess, is that while not severe enough to make the patients complain of excruciating

pain, it is usually severe enough to keep them awake at night, and this symptom is one of the earliest and one of the most significant symptoms of brain abscess. It occurs with its greatest severity in the initial stage, but persists through the latent stage, and again becomes severe in the terminal stage.

Vomiting is a symptom of great importance in the initial and terminal stages of brain abscess, and is one which should always be considered as an important diagnostic sign. It is present in about 50 per cent of the cases.

The muscular paralyses which occur in cases of brain abscess depend naturally upon the location of the purulent focus. While the reports of a large number of post-mortem examinations seem to show that cerebellar abscesses, of otitic origin, are more common than abscesses in the cerebral hemispheres, clinically this ratio is reversed, and most clinicians will report that a temporosphenoidal abscess, of otitic origin, is about twice as frequent as is cerebellar abscess. The muscular paralyses which occur are usually those involving the ocular muscles. The sixth nerve is the nerve most usually affected, owing to its peculiar position. This nerve, as you will remember, runs across the apex of the petrous pyramid, and consequently could easily be involved, either in cases of temporosphenoidal abscess or in cases of cerebellar abscess, situated near the cerebellopontine angle. Abducens paralysis. then, is a symptom which should always make one suspicious of a purulent focus within the brain.

A sign of considerable importance in these cases is the presence of an optic neuritis, either beginning or fully developed. In any case of suspected intracranial lesion, or, in fact, in any case of suppurative otitis media, with or without mastoiditis, in which headache persists, and the temperature is elevated, a careful examination of the ocular fundus should always be made, in order to reveal early symptoms of beginning choked disk.

Next we come to various localizing

symptoms. Where a brain abscess involves the left temporosphenoidal lobe, certain localizing symptoms appear, which render the recognition of the abscess comparatively easy: that is, in these cases we usually have a characteristic aphasia. Patients suffering from this condition are unable to name objects presented to them for inspection. For instance, the patient is shown a watch. He is unable to name the object, but will name its use, saying that "it is something to tell the time by." Shown a key, patient will say, "something to unlock the door with." A match is "something to strike a light." A cigar is "something to smoke." Never, however, is the object named, although its use is clearly defined by the patient. In certain of these cases the patients are unable to write, or, if they do write, the writing will be found to be mirror-writing-that is, their writing is absolutely unintelligible until looked at with a mirror, when the words appear clearly. One case of this kind came under my own observation, in which the symptom of mirror-writing was exceedingly well marked. Sometimes these abscesses are located in parts remote from the ear. One of these cases which I am certain was of many years' duration, and was simply lighted up to renewed activity by a middleear inflammation occurring ten years after the primary attack, was located in the island of Reil, and gave rise to the characteristic "jargon aphasia," which is indicative of involvement of this particular region of the brain.

Perhaps the citation of a single case, occurring recently, may serve to fix the picture of an acute brain abscess more clearly in your memory. This patient was a young girl who had suffered from a chronic middle-ear suppuration for a number of years. She came into the hospital complaining of an acute exacerbation of this chronic purulent otitis. The left mastoid was tender, and there was profuse discharge from the left ear. The patient also had considerable headache, and had an elevation of temperature of about 101°. A radical operation was performed the day

following her admission to the hospital. and a discolored area of dura was exposed in the middle fossa. As the temperature had not been high the dura was not incised, as the pachymeningitis present seemed to account fully for the headache. This patient's temperature continued to be elevated between 101° and 102°; she vomited considerably after her anesthetic, and this vomiting persisted for about three days. Her headache continued, and she seemed very ill. On the fourth day after the operation a careful examination revealed the characteristic aphasia. The temperature was then about 101°. The girl was somewhat dull, but not unconscious. The pulse had gradually fallen in frequency, from about 96 at the time of admission to 48 on the fourth day. There was beginning choked disk upon the affected side. Rapid operation revealed a temporosphenoidal abscess, which was evacuated, and the patient made a perfect recovery.

While these symptoms are characteristic of an abscess located in the left temporosphenoidal lobe, we must remember that an abscess in the right temporosphenoidal lobe will give rise to no aphasic symptoms. The right temporosphenoidal lobe has properly been called the "silent" lobe of the brain, and here we must depend entirely upon the symptoms of temperature, headache, first a rapid and then a slow pulse, to enable us to make the diagnosis.

When the abscess is located in the cerebellum, there are certain symptoms which aid us in making the diagnosis. In cerebellar abscess disturbances of equilibrium frequently present. The patient tends to fall to the affected side. cerebellar abscess the infection usually takes place through the internal auditory meatus, the port of entry of the infection being either one of the semicircular canals, or the round or oval window. In other words, a purulent labyrinthitis frequently precedes the development of a cerebellar abscess. If the case has been under observation for a sufficient length of time, these labyrinthine symptoms have undoubtedly excited attention—that is, the patient has complained of vertigo, vomiting, profound deafness, and has probably developed nystagmus, the quick movement of the eyes being toward the healthy side. Later such a patient will still complain of the vertigo and nausea, but the nystagmus will then be directed toward the diseased side. important in every case of aural suppuration to examine the eyes for this one symptom of nystagmus. For instance, a patient presents with aural suppuration. There is some vertigo, and the patient has a nystagmus toward the right, the left ear being the seat of the suppuration. The vertigo may improve, and all of the symptoms may partially or completely disappear, but after a time the patient will complain of headache, a recurrence of the symptoms, and the nystagmus will be directed toward the diseased side—that is, toward the left side. This is strongly indicative of a suppurative lesion within the cerebellum.

We have now considered the symptomatology of abscess of the brain. Let us now take up the symptomatology of thrombosis of the lateral sinus, as the object of this short talk is to enable us to differentiate between these two conditions.

A sinus thrombosis is a general systemic infection, due to the introduction into the circulation of a specific poison through the avenue of the lateral sinus. First, remember some of the anatomical points regarding the lateral sinus. The lateral sinus is a large blood-vessel traversing the mastoid portion of the temporal bone, beginning above at the torcular Herophili, and terminating below in a large dilatation of the venous channel commonly called the jugular bulb. The situation of the lateral sinus and of the jugular bulb varies considerably in different subjects. Normally, the lateral sinus lies about one-half inch behind the posterior wall of the external auditory meatus. In this position it runs through the posterior portion of the mastoid, and may be entirely beyond its cellular structure. In quite a number of cases the lateral sinus, while it occupies this position, is completely surrounded by pneumatic cells. In other subjects the sinus may lie far forward, in extreme cases so far forward as to actually impinge upon the posterior wall of the bony external auditory meatus. In this situation it may overlie the mastoid antrum. In some cases it lies at a lower level than the superficial portion of the mastoid antrum.

The jugular bulb also presents certain anomalies; in some instances the dome of the jugular bulb is exceedingly high, and it may encroach upon the floor of the tympanic cavity and of the deeper portion of the external auditory meatus. Ordinarily, the dome of the jugular is covered with firm bone. In certain instances, however, dehiscences occur in this bony covering, so that the bulb of the jugular lies exposed in the floor of the tympanic cavity. It is easy to understand, therefore, how, in cases of middle-ear suppuration, infection either of the lateral sinus or of the jugular bulb may occur through one of two avenues: first, and most usually, through the wall of the lateral sinus as it passes through the mastoid process; secondly, and less frequently, but by no means rarely, through the dome of the jugular, by direct infection from the middle ear, without any previous mastoid involvement.

The pathology of the condition is interesting, in that we first have an infection of the wall of the sinus or of the wall of the bulb, as the case may be. The vessel walls become infected with the organism causing the middle-ear suppuration, and as the result of this infection the wall becomes infiltrated with inflammatory products. Gradually the inner wall of the vessel becomes involved, and a parietal clot is formed. If this clot increases in size it may become large enough to entirely close the lumen of the vessel. On the other hand, the clot may remain parietal, and still cause systemic symptoms. During the period of formation of the clot few or no symptoms may be present. After a certain length of time, however, this septic clot begins to break down, and this occurs whether the thrombus is complete or whether it is incomplete or parietal. As the clot breaks down certain quantities of

septic material are thrown into the general circulation, and these produce systemic symptoms.

The most characteristic symptom of a septic thrombus within the lateral sinus or jugular bulb is a sudden elevation of temperature. The temperature rises rapidly from normal, or from a point slightly above normal, to 104° or 105° or even 106°, the temperature being relatively higher in young subjects than in adults. This rise in temperature attains its maximum in the course of two to six hours, and then occurs a spontaneous fall, either to normal or to 100° or 101°. The fall in temperature is usually quite as rapid as the rise. Often at the end of from eight to twelve hours after the beginning rise the temperature is normal or nearly so, and then a second rise follows, this being an indication of a second amount of poison being thrown into the general circulation, due to further disintegration of the throm-This second rise in temperature is followed by a second fall, and these remissions in temperature occur once or twice in twenty-four hours, as the case progresses. Occasionally the poison is thrown into the general circulation so rapidly that the remissions in temperature may be insignificant—that is, the temperature may remain persistently between 105° and 103°, the systemic infection occurring so rapidly as to give us a sustained high temperature, with only slight remissions.

These are the characteristic temperatures of a sinus thrombosis, and this sign alone is sufficient to enable one to make a diagnosis in the very large majority of cases. Other symptoms which would enable us to recognize this condition are characterized by their absence. In other words, we have a patient whose general condition seems very satisfactory, excepting that once or twice within the twenty-four hours there will be an abrupt rise in temperature to 104° or 105° or 106°, with a remission of greater or less extent, followed again by the same cycle of symptoms. These patients do not seem to be ill. sorium is almost always clear, the patients complain of no discomfort at all, excepting perhaps of slight headache when the temperature is at its height, and rather profuse perspiration when the temperature begins to fall.

A number of authors state that these rises in temperature are usually accompanied or followed by severe chills. In a large number of cases of sinus thrombosis which have come under my observation, quite as many patients have had no rigor as have presented this symptom. The pulse is always rapid when the temperature is high, the pulse-temperature rate being sustained at about a normal ratio. The tongue is usually dry and heavily coated. Pain is seldom present, excepting the slight headache, above alluded to.

If the case is allowed to go on untreated, the thrombus gradually extends to the internal jugular vein, and then certain other symptoms make their appearance. The patient may then complain of slight pain in the neck, and in a small proportion of cases I have seen a torticollis present, although this is rather an unusual symptom. Palpation of the neck reveals some tenderness along the course of the internal jugular vein, and enlargement of the glands along the anterior border of the sternomastoid muscle. This is a most important sign; it is present in the very early stages, and is one which should not be overlooked.

Extension of the clot into the internal jugular is said by some authors to be characterized by the presence of a cord-like swelling along the anterior border of the sternomastoid muscle, following the course of the internal jugular vein. I have never, in a single instance, been able to map out this cord-like swelling, although I have seen several cases in which at operation the jugular was filled with a clot.

Glandular enlargement is a symptom of much greater importance than is the presence of any cord-like swelling along the anterior border of the sternomastoid muscle.

If the process progresses still further, or sometimes even before jugular involvement, septic emboli may lodge in some of the viscera, and give rise to symptoms dependent upon the particular organ in which they lodge. The pulmonary tissue is the favorite site of lodgment of such an embolus, giving rise to a septic pneumonia. Next in frequency come the joints, next the brain, then the liver, and later the gastrointestinal tract. Emboli lodging in these different viscera give rise to symptoms so characteristic that it is not necessary for me to recount them here in detail.

One sign which I have not mentioned, and which is of not infrequent occurrence, is the presence of choked disk.

This sign, the choked disk, as you will remember, also occurs in cases of brain abscess—in fact, may be present in any intracranial complication of otitis media.

The value of the differential blood count in these cases is exceedingly problematical. I have seen very few cases of sinus thrombosis in which the polymorphonuclear percentage was elevated. I have seen a few of these cases in which the polymorphonuclear per cent was over 80, but in the majority of cases it has only been elevated, say between 75 and 80 per cent, and in only one case that I remember did it reach 85 per cent.

In recent years much has been written upon the value of the blood culture, as a diagnostic sign, in cases of sinus thrombosis. When in a case of acute or chronic otitis media, either accompanied or unaccompanied by mastoiditis, a specific organism such as the streptococcus is found in the blood, we have a sign of the utmost value as confirming our diagnosis of a septic sinus thrombosis. Unfortunately, however, a positive blood culture is not always present in cases in which a septic thrombus is present in the lateral sinus. Where a positive blood culture exists, it is of the greatest diagnostic importance, and practically clinches the diagnosis absolutely. The absence of a positive blood culture, however, by no means excludes the presence of a septic thrombus within the lateral sinus. This is a point of the utmost value, and one which must not be forgotten. Clinical signs of sinus thrombosis should always outweigh a negative blood culture. Moreover, the vessel from which the blood is drawn is of considerable value. In one case which came under my observation the blood culture from the median vein was negative, although the vein was so small as to render the culture somewhat unsatisfactory. Blood culture from the sinus was positive, and the patient recovered after appropriate operative interference.

We next come to the differential diagnosis between the disease just considered and the one previously considered—that is, brain abscess. The two pictures are so distinct that it is hardly possible for an error in diagnosis to occur. In brain abscess we have a moderate temperature in the early stages, then a period of latency, and then a terminal stage of high temperature, or of low temperature, with cerebral symptoms so marked as to impress themselves upon even the most superficial observer.

The general symptoms in sinus thrombosis are trivial, and the temperature is practically the sole guide. A differential blood count may aid in a diagnosis in that, if the polymorphonuclear percentage is high, we might suspect a sinus thrombosis. In the majority of my cases, however, the polymorphonuclear percentage has not been very much elevated. I remember one case only in which the polymorphonuclear percentage was over 80. In brain abscess, on the contrary, the polymorphonuclear percentage is frequently 80 or over. characteristic difference in temperature, therefore, the absence of cerebral symptoms in sinus thrombosis and their presence in cases of cerebral abscess, the rapid pulse-rate in sinus thrombosis and the slow pulse-rate in every stage of cerebral abscess, except the early stage, ordinarily render a differential diagnosis comparatively simple.

Blood culture in cases of sinus thrombosis is frequently positive, and where it is positive it makes the diagnosis perfectly certain. Negative blood culture, while not excluding sinus thrombosis, would be expected in cases of brain abscess. Certain cases may occur in which, for instance, a cerebellar abscess is secondary to a sinus thrombosis. These cases, of course, are confusing, and a differential diagnosis may not always be possible.

When we come to the treatment of these conditions, we must remember that once the diagnosis of either condition is made. operative interference is the only plan which offers the patient the least hope of recovery. In cases of cerebral abscess, as soon as the diagnosis has been made immediate operation should be resorted to. In cases in which the abscess can be localized—that is, in cases of temporosphenoidal collections of pus-the operative procedure which has been followed by the best results is to attack the focus of suppuration along the path of infection; in other words, the operator should discover, if possible, the route by which the infection has traveled to the brain substance. Frequently, at the time of the original mastoid or radical operation, a discolored area of dura will have been seen, and when such an area has been found, the best results will be obtained by opening the abscess through the infected dura. Formerly I was an ardent advocate of opening these abscesses in every case above the zygoma, through the normal brain substance. Experience has taught me, however, and this experience is confirmed by other observers, that the best results will be obtained by making a wide dural exposure comprising the original infected area of dura. In other words, if we have an area of infected dura over the tegmen tympani, the bone should be removed about this area in every direction so that the dura is exposed over a space of at least an inch and a half, or better, two inches. An incision into the brain substance, through the portion of dura involved, will ordinarily enter the abscess cavity. My own plan of procedure is to incise the dura over the suspected area with a scalpel, and then introduce a director into the brain substance. Aspiration of the abscess cavity, for exploratory purposes, is absolutely useless as the pus is ordinarily too thick to flow into the aspirat-

ing needle, and the same objection applies to the use of the knife in the brain substance. After incision of the dura a director passed into the brain will frequently evacuate a few drops of pus, the fluid following the groove in the director. When this occurs the incision in the dura should be enlarged, and a narrow. thin-bladed retractor should be passed along the director until it enters the abscess cavity. The director may then be withdrawn and a second retractor passed along the first. By separation of these two retractors the abscess will be completely evacuated. Care must be taken not to allow the pus to flow too rapidly, as this will interfere with intracranial pressure, and may be followed by a cerebral hemorrhage. The pus should be allowed to flow rather slowly, or its flow should be stopped from time to time, in order to allow a reëstablishment of the normal intracranial pressure. After the abscess has been thoroughly evacuated, a cigarette drain should be passed into the cavity, the surrounding dura be covered with iodoform gauze, and an antiseptic dressing applied.

This same technique should be followed in dealing with cases of cerebellar abscess. In opening a cerebellar abscess, as most of the infections occur by way of the internal auditory meatus, it is well to first attempt evacuation of the abscess by an incision in the cerebellar substance in front of the lateral sinus, in those cases in which the sinus is placed far enough backward to permit of such an incision. In many instances, however, the sinus is placed far forward, and in these cases it will only be possible to evacuate the cerebellar collection of pus by an incision into the cerebellar substance behind the lateral sinus.

In some cases the location of a cerebellar abscess my be such that although the abscess may be entered in front of the lateral sinus, it is impossible to drain the abscess thoroughly through this opening. Under these conditions it may be necessary to make a counter-opening through the cerebellar substance, dura, and bone, behind the lateral sinus, and secure through-and-

through drainage of the abscess. In one case coming under my observation, in which this plan was advised and followed, the patient made a complete recovery. In another case coming under my own observation in which the plan was tried, it was unsuccessful. The employment of a counter-opening is particularly applicable to those cases in which the cerebellar abscess is of considerable size, and lies close to the inferior border of the lateral sinus. Here the probe introduced into the abscess cavity passes almost directly downward, and if the abscess is of considerable size the cavity cannot be thoroughly evacuated by a drain placed in front of the lateral sinus, no matter in what position the patient's head is maintained. Where a counter-opening is necessary, it seems to me wiser to expose the cerebellar meninges by a separate incision behind the lateral sinus, and then after incision of the dura to make the counter-opening on the point of a probe passed into the abscess cavity through the cerebellar substance, downward and outward against the dura. My reason for making a second opening in this manner, rather than uncovering the lateral sinus through the original incision, is that if the plan advised is followed, severe hemorrhage from the mastoid emissary vein is avoided. This hemorrhage is always troublesome and prolongs the operation. If, however, the cerebellum is exposed posteriorly to the emergence of the mastoid emissary, the counter-opening can be made very quickly and without troublesome hemorrhage.

In cases in which incision of the dura, either in the cerebellar or middle cranial fossa, fails to reveal the presence of pus, I am in favor of a large removal of bone over the suspected area and a free crossed incision of the dura—in other words, of performing a decompression operation over the affected part. The subdural space is then packed with iodoform gauze, and in this way the subdural space is obliterated. Moreover, the collection of pus within the brain substance will naturally tend to travel in the direction of least resistance, and

at the end of twelve or twenty-four hours after the decompression operation, incision of the brain substance may enable the operator to evacuate the purulent focus which could not be discovered at the time of primary operation. Evacuation of the abscess at this period will not be followed by a meningitis because the subdural space has been thoroughly walled off. If an abscess is evacuated through healthy brain substance, after incision of healthy dura, the danger of general meningeal infection is great, and it has been our experience that in many cases in which the abscess has been successfully evacuated the patients have subsequently died of acute purulent meningitis. This unfavorable result may, I believe, be avoided by evacuating the abscess by a two-stage operation, as suggested.

In the treatment of sinus thrombosis, as soon as the diagnosis has been made, surgical intervention should be at once instituted.

In the early stages of sinus thrombosis it may be sufficient simply to open the lateral sinus and evacuate the clot. This procedure necessitates an exposure of the sinus over a length of, at least, an inch in adults, and better still, over a length of an inch and a half. In other words, the sinus should be exposed from just beyond the knee to a point as near to the jugular bulb as possible. Careful examination of the sinus prior to opening the vessel is advisable. It is practically impossible to determine by palpation whether or not a clot is present. If the vessel is completely filled by a thrombus, its recognition may be comparatively simple, although I have palpated sinuses which seemed to contain fluid blood, and which upon exploration were found to contain a clot. In examining the sinus, prior to incision, it is well to first place a pledget of sterile gauze between the overlying bone and the lateral sinus at the torcular extremity of the exposed area. This will shut off the blood from the torcular, and if the sinus contains no clot, it should naturally empty itself into the jugular bulb. If the bulb is ob-

structed, the sinus will not empty itself; in other words, it will not become flattened after the gauze plug is placed in position. In the same way, if a pledget is placed between the sinus and the overlying bone. at the jugular extremity of the exposed vessel, if the sinus is free, it will become filled with fluid blood from the torcular and present as a distended vessel in the wound, and this distention will immediately disappear when the plug below is removed. All of these signs are theoretically perfect, but practically admit of many exceptions. There may, for instance, be a parietal clot in the sinus, sufficient to cause symptoms of general septic absorption, and yet not sufficient to interfere greatly with the free passage of the blood through this venous channel. In cases of this kind the shutting off alone of the circulation from the upper and lower portions of the sinus will give negative results. Sufficient blood may flow through the sinus to cause its distention when firm pressure is exerted upon the vessel below, or to cause its collapse when its lumen is occluded by pressure above, in spite of the presence of a parietal clot of considerable size.

Exploratory puncture of the sinus by means of the aspirating needle is also without value for the reason already suggested, that a parietal clot not occluding the lumen of the vessel may be present, and may be able to give rise to systemic infection. The exploring needle might pass either completely through the clot or might miss it altogether, and fluid blood might be obtained as the result of the procedure, in spite of the presence of a parietal clot. The only logical method of procedure, in a case in which the diagnosis of sinus thrombosis is reasonably certain, is to first shut off the circulation from the torcular end of the sinus by a firm packing introduced between the sinus and the overlying bone. and to incise the sinus wall. If free hemorrhage takes place from below, we are certain that no obstructive clot is present in the jugular bulb. Moreover, if a parietal clot were present in the bulb, it would probably be washed out by the blood cur-

rent, consequently an incision is of distinct therapeutic value. After incision of the sinus, assuming that there is free hemorrhage from below, the return current from below should be cut off by the insertion of a pledget of gauze between the lower end of the sinus and the overlying bone, while the pledget of gauze obliterating the upper end of the sinus should be removed. Free hemorrhage from the torcular extremity will demonstrate the patency of the sinus in this direction, or if a parietal clot is present, will probably wash out this parietal clot. After opening the lateral sinus, if free hemorrhage does not occur either from the torcular extremity or from the portion of the sinus lying close to the bulb, the operator should then proceed to remove the obstructive thrombus. If this thrombus lies in the torcular portion of the sinus, the vessel should be uncovered backward toward the torcular, and the incision in the sinus wall extended far enough to enable the operator to completely remove the clot by means of a curette introduced into the lumen of the sinus. It is not necessary in every case to incise the sinus wall in the direction of the torcular, to the extreme limit of the clot. The sinus should be uncovered in the direction of the torcular until the sinus wall seems healthy: then the cautious introduction of the curette will enable the operator to extract the clot and secure free hemorrhage, without the removal of an undue amount of The operator should never desist from his exploration, however, until free hemorrhage is obtained from the torcular end of the sinus. As soon as such free hemorrhage occurs, it should be allowed to continue for a brief period, perhaps for a couple of seconds, so as to thoroughly wash out all septic thrombi by means of the force of the blood current. Hemorrhage is then checked by introducing a packing either of iodoform or sterile gauze between the sinus wall and the overlying bone.

In dealing with the lower extremity of the sinus, two methods of procedure are available. It must be remembered that free hemorrhage from below does not, of neces-

sity, demonstrate the absence of a parietal clot in the jugular bulb, owing to the fact that hemorrhage from below in these cases comes chiefly from the inferior petrosal sinus. The jugular bulb is of considerably greater diameter than is the inferior petrosal sinus, consequently a clot may be present in the bulb, and yet the petrosal sinus may be perfectly free. Under these circumstances systemic infection might very well take place, and still the sinus might bleed freely from below when opened. With the evidence of systemic infection, therefore, it is permissible to place a ligature about the internal jugular vein in the neck, prior to investigating the lower portion of the sinus, provided the presence of a clot has already been demonstrated in the upper portion of the sinus. Personally I am in favor of applying the same rules to the lower extremity of the sinus as I have already suggested as being applicable to its upper or torcular end-that is, to evacuate any clot which may be present in the lower portion of the sinus by means of the curette before interfering with the jugular. This procedure is attended with a certain amount of danger, because if the sinus and jugular are perfectly free, curettage of the lower extremity of the sinus may, even in careful hands, be followed by the aspiration of air into the vessel, and the sudden death of the patient by an air embolus. If care is taken to apply pressure over the internal jugular vein at the time that the lower end of the sinus is investigated, such an accident, I think, will never happen. Whether, therefore, the jugular be ligated in the neck prior to exploring the lower end of the sinus, or whether the lower end of the sinus should be explored before interference with the jugular, must, I think, depend upon the severity of the symptoms. Given a case in which there is an infection of moderate severity, as indicated by a rise in temperature to 104°, but not over this, with a negative blood culture, and the presence of a clot in the sinus, I feel inclined to simply evacuate the clot from the lateral sinus itself, securing free hemorrhage both from above and from below.

and to then wait for further symptoms. In many cases this simple turning out of the clot from the sinus will be followed by an absolute cessation of all symptoms, and a complete recovery of the patient. On the other hand, if the symptoms of general sepsis are severe, as indicated by a very high temperature, to 105° or 106°, and considerable prostration, I then believe that it is wise to place the ligature about the jugular prior to interference with the lower end of the sinus.

The blood culture is of considerable value in all of these cases in enabling the surgeon to decide as to whether or not the internal jugular vein should be interfered with. A positive blood culture in these cases should always cause the surgeon to decide in favor of jugular excision, rather than of interference limited to the sinus alone. It may be stated almost as a rule that in cases of mild infection, with a negative blood culture, and with an obstructing thrombus, evacuation of the clot from the sinus alone may be looked upon as a procedure which will probably be radical enough. With a positive blood culture. however, interference with the sinus alone will probably never be sufficient, and the surgeon must in these cases not only evacuate the clot from the sinus, but must also remove the vein.

Another class of cases present themselves in which, upon opening the sinus, we find that it contains fluid blood-that is, we have free hemorrhage both from the torcular and from the bulbar end of the sinus, and yet we have symptoms of profound sepsis. In these cases we have undoubtedly to deal with a parietal clot, and the jugular should always be excised from a point low down in the neck to a point just below the base of the skull, in spite of the fact that the sinus appears perfectly In such instances we have evipatent. dently to deal with a parietal clot, which is causing a severe systemic infection, and the only way in which we can eliminate this systemic infection is to shut off the avenue through which this infection occurs, namely, to excise the internal jugular

throughout a considerable portion of its extent. In some of these patients the vein will be found thrombosed. In every instance the ligature must be passed about the vein below the level of the thrombus, and in all cases I believe it is wise to excise the vein from a point not higher up than the level of the omohyoid muscle. In this operation the common facial trunk is ligated and divided between two ligatures. This is the only important tributary to the internal jugular, although certain smaller veins, such as the thyroid and laryngeal, may require ligation during the course of the operation.

Certain authors have advocated ligation of the jugular rather than excision, and many convincing cases have been reported in support of this procedure. Where the vein is simply ligated and not excised, the ligature should be placed above the entrance of the common facial vein. I believe, however, that the value of this procedure is problematical, and that its use should be restricted to a comparatively small number of cases. I have yet to be

convinced that cases recovering after simple ligation would not have recovered with the simple clearing out of the clot in the lateral sinus, without any interference with the jugular at all, and I think that you gentlemen who are just beginning the practice of medicine would be far safer in following the procedure which may seem at first extremely radical, but which will, I believe, in the long run prove to be the most conservative, so far as results are concerned.

There is a growing tendency among surgeons to deal with these cases more and more radically—that is, to excise the jugular in every case of sinus thrombosis, rather than to resort to the simple operation of evacuating the clot from the sinus, and then waiting to see if this simple procedure will be efficient.

The plan to be adopted must depend upon the severity of the symptoms in each individual case. But it is better to err on the side of radicalism and save the patient than to be too conservative, and thereby sacrifice a life.

#### THE THREE-STEP OPERATION IN TUMORS OF THE SIGMOID AND COLON.

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In 1901, after discussing extirpation of high cancers in the rectum, I stated:

"The thought has suggested itself that in carcinoma of the sigmoid, in which the tumor can be brought entirely outside the abdominal wall, it might be safe to fix it in this position until the peritoneal cavity is closed off by adhesions, and then excise it extra-abdominally. This would involve an artificial anus, to close which finally it would be necessary to employ end-to-end union of the segments, and this might be quite as dangerous as performing the entire operation at one sitting. The case which suggested this thought was the fatal one in this series. The stricture in this instance was so tight that it was impossible to thoroughly empty the bowel before the operation; as a consequence of this there was a large mass of hard fecal balls in the colon above the site of the tumor. The gut was dragged outside of the abdominal wound after it was cut across above the tumor, and as many of these as possible were removed, but unfortunately one of those high up in the transverse colon came down and obstructed the aperture in the Murphy button, thus causing obstruction and tearing of the gut, which was followed by peritonitis and death. In such cases, therefore, where the upper bowel cannot be emptied before the operation, the author would advise either making a temporary colotomy until the bowel could be cleaned out, and then remove the neoplasm at another sitting, or the employment of the extraabdominal method suggested above." (Diseases of the Anus, Rectum, and Pelvic Colon.)

After eleven years' observation and experience in four cases I would now go further and say that I believe that almost



Fig. 1.—Sigmoid with tumor drawn out on abdominal wall, showing the peritoneal layers of the mesosigmoid cut, thrown back, and sutured over so as to leave no raw surface in the abdominal cavity. The two legs of the sigmoid are drawn out through the abdominal wall and brought together by two lines of sutures, so as to bring into apposition the sides of the gut and prevent wounding the artery in the mesentery when the clamp is put on.

all cases of neoplasm or tight stricture of the sigmoid, or even diverticula, ought to be removed by extra-peritoneal excision. At that time I had not formulated my technique, nor was I prepared to speak as positively as I am now. The mortality from resection of the sigmoid, whether by end-to-end or lateral anastomosis, is so high that almost any step to reduce it ought to be welcomed by surgeons and patients alike.

In the four cases that I have operated upon by this method all are alive—three for cancer and one for stricture. The one for stricture was syphilitic and died from this disease some nine months after the operation. Two of the cancer cases now live in New York, and one has gone back to Italy apparently well at the time of leaving me, four years after the operation. This compares most favorably, though a small number of cases, with my own experience and my research in literature, which gives over 50 per cent mortality for

resection of the sigmoid and direct union. I therefore offer the following technique, not as a perfect method, because I believe some ingenious surgeon will come along and improve upon it in due time, but as a method which may be relied upon and may be the means of suggesting a better one.

Assuming that the growth is above the rectosigmoidal juncture and movable, the incision is made through the outer margin of the left rectus muscle; we make this incision because if it proves impossible to remove the growth it is one of the best incisions for the exit of an artificial anus. Care should be taken not to wound any of the large veins that run along this region. The abdomen having been opened by an incision three or four inches long in order to give plenty of working space, the patient is placed in Trendelenburg's posture, and the small intestines all lifted out of the pelvis and packed up as high in the abdomen as possible. The sigmoid is then caught and pulled out of the abdomen; the peritoneal covering of the mesosigmoid is then slit along for a distance well above and below the tumor (Fig. 1); this incision

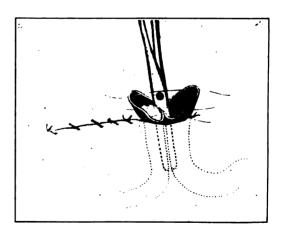


Fig. 2.—The tumor having been removed, the clamp is adjusted to cut away the spur, and the sutures by which the artificial anus is to be brought together are shown introduced; these are put in when the artificial anus is closed.

should be made on each side and rather close to the gut itself. The peritoneum is then peeled back to the posterior abdominal wall, or rather to the crest of the ilium.

The blood-vessels and their containing cellular tissues and glands are exposed, and

the loosening of the peritoneal glands will allow the gut to be brought out upon the abdominal wall. All glands and fatty material around the blood-vessel supplying the part of the gut which is involved in the growth are pulled or milked away toward the gut, thus exposing the blood-vessels. The artery and veins can then be clearly seen, and the main vessel supplying the involved portion is cut and tied in two places, as will be seen in Fig. 1. The gut is thus loosened and can be pulled out of the abdominal cavity. The stumps of the blood-vessels are pushed back between the two peritoneal layers of the mesosigmoid, these two layers are stretched together, thus covering up all the nude surface in the peritoneal cavity. The two legs of the loop of the sigmoid are now brought together by one row of sutures running along the border of the mesentery, well down to the peritoneal cavity; they are then rotated on themselves, and another row of sutures is run from the same level along through the long muscular bands of either leg down to the peritoneum as before, thus bringing the flat surfaces of the gut together.

The peritoneum is now stretched around the two legs, with the tumor brought well

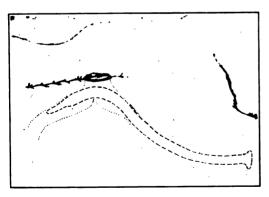


Fig. 8.—Showing a long rubber bougie introduced so as to press back the lower wall of the united gut where the clamp has cut away the spur.

outside the abdominal cavity, and after this the gut is stretched to the skin; it is then covered with rubber tissue and left in situ from twenty-four to seventy-two hours, according to the condition of the patient. If there is any indication of obstruction a puncture can be made in the upper loop for

allowing gas to escape, or if gangrene should be imminent in the loop exposed there is no reason why it should not be excised any time after eighteen hours or less. In my second last case I excised the growth in twenty hours after the operation, without any complications. When the gut

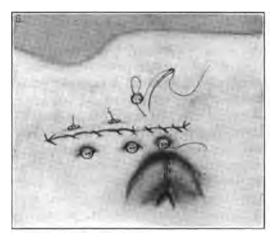


Fig. 4.—Shows the gut dropped back between the peritoneal and abdominal muscles, the latter being held in apposition by buttons and silver wire. The akin is brought together by simple running sutures, either overhand or subcutaneous.

is excised it should be done by a V-shaped incision, as in Fig. 2, in order that there may be abundant material for bringing the ends together at a later period.

It will be observed that having tied off the main blood-vessel supplying this loop there will be little or no hemorrhage and no pain in this resection; and there is no danger of peritoneal infection, as this cavity will have been closed off after the first five or six hours. Four or five days. or almost a week, should elapse before the clamps are put in to cut away the spurs. I use a Pryor hysterectomy clamp, and introduce it well down into the two legs of the artificial anus; it takes from three to seven days for this to cut through before the forceps come away; I then introduce through the rectum a No. 8 Wyeth modified Wales bougie, passing it up beyond the artificial anus. Its tip will usually come out of the artificial anus, but it can be reintroduced and carried into the upper leg of the spur-its elacticity will press the spur backward and cause the mouth of the artificial anus to roll inward. This bougie is left in for two hours, three times a day, until the wound caused by its cutting away the spur has healed, thus giving a wide aperture for the passing of fecal material downward.

The next step consists of dissecting the edges of the artificial anus away from the skin and the fascia of the abdominal wall down into the peritoneum. The aperture in the gut is then sewed up by one row of through-and-through sutures and one of Lembert's; these must be carefully placed. the first being of silk and the last of fine chromic gut. This being accomplished the peritoneum is stripped from the abdominal wall for about a half-inch all around the wound: the cicatricial tissue and fascia are trimmed away, and three or four double anchoring sutures threaded upon agate buttons are passed across the wound and out upon the skin on either side to about one inch away from the margin of the

wound. The buttons serve as bases for the sutures to rest upon and prevent their cutting into the skin, and render them much less painful than the ordinary suture. If the wound should gape one can twist the button like a tourniquet and bring the parts closer together. After the sutures have been tightened an ordinary subcutaneous suture is used to bring the skin together.

It is not presumed that every one of these cases will heal perfectly without a small fecal fistula, but in time they will all close up. The operation is not so brilliant as that of end-to-end or lateral anastomosis when these succeed by primary union, but it is much safer; in fact, barring some unforeseen accident, I see no reason why we should ever lose a resection by this technique. It is slower, to be sure, and the patients chafe under the artificial anus during the first steps, but when they learn the conservatism of the method and the great risk avoided, they are well satisfied.

## OINTMENT SCARLET RED IN THE TREATMENT OF EYE DISEASES.

BY WILLIS O. NANCE, M.D.,
Attending Surgeon, Illinois Charitable Eye and Ear Infirmary, Chicago, Ill.

In the Journal of Ophthalmology and Oto-Laryngology for February, 1911, the writer called attention to the excellent results which he had obtained from the use of scarlet red ointment in certain corneal diseases, notably in those deeper affections of the cornea which involved loss of tissue. During the twelve months intervening since that report was published he has employed the ointment almost daily in his dispensary and private practice, and his later experience has fully justified his belief as expressed in the article before mentioned, that "in scarlet red we have a safe therapeutic agent of value."

Scarlet red, or the Scharlach Roth of Biebrich, is simply an anilin dye derived from disulphonic acid. It was first brought to the attention of the chemical world in 1882. Davis, of Johns Hopkins, appears to be the first to employ the dye, at least to

any extent, in a therapeutic way. In 1909 he published a series of cases of granulating wounds treated with scarlet red with marked benefit, and concluded that "the stability, thickness, and normal appearance of healing under this dye is noteworthy." Fischer, of Bonn, however, three years earlier declared his belief that the product exerted a marked influence as a specific attraxin upon surface epithelium. Davis's contribution the dve has been employed successfully by many surgeons, particularly in cases in which there was more or less extensive loss of epidermis, in burns, etc. Its favorable use in accelerating epidermization and cicatrization has been proved by the writer recently in several cases of burns of the skin and tissue in the vicinity of the eye. In one instance of rather severe scalding with loss of skin in the radius of from two to three inches

above and below the eye, the value of the ointment was positively and clearly demonstrated by its successful use on one part of the denuded surface, the other area being treated by the ordinarily employed surgical measures.

That scarlet red has a useful and valuable place in ocular therapy I am satisfied. Its especial effect in corneal disease is to incite and accelerate regeneration of stroma, thereby encouraging the process of cicatrization. It apparently has no antiseptic properties. Cases of ulcer of the cornea treated with scarlet red assuredly heal quicker than those in which it is not used.

The ointment employed in my work the past year has been that of Parke, Davis & Company. I have yet to meet with an instance in which the slightest irritation of

the eye followed its use. The indications for its use in eye work are in ulcers of the cornea, perforating corneal wounds, loss of corneal tissue from pterygium operations, conjunctival injuries, loss of integument of the lids or other instances in which there is a loss of tissue.

A small bit of the ointment, the size of a pea or larger, is introduced two times a day into the conjunctival cul-de-sac in corneal diseases and a bandage applied. In loss of integument it may best be applied to the edges of the denuded surface. The use of the ointment in eye diseases does not of course supplant the use of antiseptics, mydriatics, etc., which should be employed as indicated.

The ointment has the advantage of being easily obtained and is inexpensive.

32 NORTH STATE STREET.

# THE EFFECT OF TUBERCULIN (BOUILLON FILTRATE) ON THE PULSE IN PULMONARY TUBERCULOSIS.<sup>1</sup>

BY ROSWELL T. PETTIT,
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Because of the complexity of the clinical picture presented by chronic pulmonary tuberculosis, the long period of time over which the infection usually extends, and because of the sudden turns the disease may take spontaneously for better or for worse, the determination of the value of any particular therapy in this disease is extremely difficult. For this reason the value of tuberculin in the treatment of pulmonary tuberculosis is still a much disputed question, but within the past few years it has been growing in favor and many reports concerning its use have been made. In fact, we are coming out of the period of reaction resulting from the disastrous results of overenthusiasm and misuse at the time of its introduction, and it is now well established that tuberculin, if used in small doses in well-controlled cases, in an institution, is not dangerous. The conclusions drawn from the mass of information at

hand are that tuberculin is a valuable adjunct in the treatment of tuberculous infections.

How is the value of tuberculin to be determined? The course of the disease is so irregular and the immediate action of tuberculin, if used in small doses, is so slight that no definite convincing evidence is furnished by the clinical course of the disease, and hence case reports have been of little value in determining either the worth or uselessness of the tuberculin treatment.

Animal inoculation experiments have not given us much information. Some observers have noted an increase in resistance to tuberculous infection in susceptible animals following injections of tuberculin. Other investigators have found no change or an increased susceptibility in the inoculated animals.

A number of investigators have also noted an increase in the antibody content

<sup>&</sup>lt;sup>1</sup>Work done under the Max Pam Research Fund.

of the blood following tuberculin injections, but the immunity reactions have never been sharp and many workers have failed to demonstrate them entirely.

In a large number of cases the results of treatment by the hygienic-dietetic method alone have been compared with the results in a large number of cases treated with tuberculin in addition to the hygienic-dietetic method. Most reports of this sort are based upon results at the time of discharge of the patient from the institution. Such statistical studies are worthless. We are not interested in the condition of the patient at the time of his discharge, but what we really want to know is whether he is alive, and if alive, what condition he is in two, three, or five years after leaving the institution.

I have collected statistics from the literature on about 2800 cases treated with tuberculin discharged from the institution from one to seven years, and on about 19,200 cases treated by the hygienic-dietetic method alone discharged from the institution from several months to eight years, with an average length of time since discharge of about three and one-half years. On comparing the results in these two groups of cases it was found that the percentage of success in the tuberculin-treated group was 68 and in the group of cases not receiving tuberculin it was 50 per cent, an advantage of 18 per cent in the tuberculintreated group.

There are many objections to this sort of statistical study: (1) The tuberculintreated cases may be selected and the control cases not. (2) It is extremely difficult to keep track of cases for two or five years after they leave an institution. (3) There is great looseness in the classification of cases and results, and hence the enthusiasm of the author is an important factor in determining the results of treatment. (Some authors report 90 per cent of cures!)

The results in 146 cases at the Ottawa Tent Colony treated with tuberculin in addition to the hygienic-dietetic method were 16 per cent better than those achieved in 234 cases treated by the hygienic-dietetic method alone. These cases had all been discharged at least eighteen months, with an average of about three years. The cases were not particularly selected, and the personal factor was eliminated as nearly as possible by having the tabulations made by an assistant not familiar with the cases. These results convince me that tuberculin is a valuable adjunct to our other methods of treatment.

The various criteria of improvement as well as ultimate results have been made the basis of comparison in studying the results in cases treated with tuberculin and cases treated without it. These various criteria are (1) effect on expectoration, (2) prevention of relapse, (3) regulation of fever, and (4) disappearance of tubercle bacilli from the sputum.

The effect of tuberculin on expectoration is a point that has received a great deal of comment, but on which very little quantitative work has been done. The immediate effect of tuberculin in doses that cause slight reaction is an increase in the expectoration, usually followed by a decrease or return to the usual amount after forty-eight to seventy-two hours. Whether the repeated injections of the various kinds of tuberculin cause a more rapid disappearance of the sputum is hard to determine. Many writers state that they do, but the author in a comparison of the expectoration in ten expectorating cases not receiving tuberculin and in ten cases receiving tuberculin, weighing the sputum every day for thirty days, could see no constant differences in the two groups that could be attributed to the tuberculin administration.

Concerning relapse, Lyman<sup>1</sup> treated 67 cases with tuberculin and 379 without it. After eight months 19 per cent of the treated cases and 27 per cent of the untreated cases were dead. In 170 cases at the Ottawa Tent Colony treated with tuberculin, 44, or 25.8 per cent, were dead in from two to six years. In 339 cases not treated with tuberculin, 171, or 50.4 per cent, were dead in from two to six years.

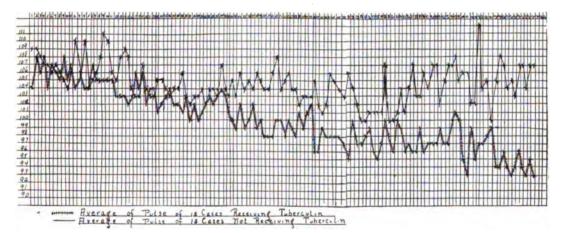
Numerous observations on the tempera-

<sup>&</sup>lt;sup>1</sup>Lyman (D. R.): Yale Med. Jour., October, 1910.

ture curve in tuberculin-treated cases have been made, but these observations are lacking in controls and hence are of little value.

The disappearance of the tubercle bacillus from the sputum has been made the basis of comparison of results in tuberculin- and non-tuberculin-treated cases by a number of authors. These studies constitute the most convincing evidence presented in favor of tuberculin. Tuberculin is a specific remedy for the tubercle bacillus, and its action is directed against this causative agent alone. There is a preponderance of evidence showing that secondary infection with the various pyogenic organisms—particularly the streptococci, staphylococci, and pneumococci-plays an important rôle in the production of the

filtrate. A study of the pulse in these cases was made and compared with the pulse in cases not receiving tuberculin. The study of the pulse chart in individual cases yields but little; marked positive, doubtful, and negative results are found in cases receiving and cases not receiving tuberculin. Therefore, in order to obtain as nearly a just comparison of results as possible, the average pulse range of a number of cases should be used in making the comparison. In fifteen cases receiving bouillon filtrate the afternoon pulse from ten days before the first injection to 120 days after was taken, and the daily average of the fifteen cases during the period when tuberculin was administered. Fifteen cases of the same classification, moderately advanced



symptom-complex of chronic pulmonary tuberculosis, and even though clinical variations between specifically treated and non-specificially treated cases are not clearly demonstrable, bacteriological examination of the sputum shows that tuberculin has a definite effect upon the tubercle bacillus. There is a marked uniformity in the results reported by Lawrason Brown, Kreuser, Phillipi, Turban, and others.

The effect of tuberculin on the pulse is a point that has not attracted a great deal of attention, but in a number of cases with low-grade fever—99° to 99.8°—with persistently high and irregular pulse (above 100), I have noticed what I believed to be a comparatively rapid return to the normal following the administration of bouillon

and advanced, with afternoon pulse running above 100, but with an afternoon temperature below 99.8° constantly, were selected, and the average pulse range in this group was obtained in the same manner and for the same length of time. All recorded cases were subjected to the same conditions of housing, diet, exercise, season, climate, etc. The average daily pulse of these two groups was plotted graphically (see accompanying chart). A comparison of these curves shows very plainly that the effect of the tuberculin on the pulse is decisive.

#### CONCLUSION.

These findings, I believe, will warrant the conclusion that in cases with a lowgrade temperature but persistently high pulse—100 to 125—tuberculin (bouillon filtrate) is of value in restoring the pulsetemperature balance.

The explanation of this action may be that a toxin neutralization follows the injection of the soluble antigen.

# THE PHARMACOLOGICAL ACTION OF VANADIUM.

In the Journal of Pharmacology and Experimental Therapeutics for May, 1912, JACKSON reaches these conclusions:

- 1. When administered intravenously the chief action of vanadium is expended on the vascular system. The central nervous system has but little influence on this action, for the rise in blood-pressure produced by injection of vanadium into an animal whose head has been removed from the body is almost identical, both in character and extent, with the rise produced by injection of the metal into a normal (etherized) animal.
- 2. With ordinary doses the mammalian heart is but little affected. The vagus endings in the heart remain active throughout the whole course of the intoxication in the intact animal. Batrachian and chelonian hearts seem to be more directly affected by the element than is the mammalian heart.
- 3. An intense peripheral vasoconstriction is produced by the metal in the spleen, kidneys, and intestines. In the intact animal the cutaneous and muscular vessels dilate from the visceral displacement of the blood, but in perfusion experiments the limb volume also decreases slightly under the action of vanadium.
- 4. The view held previously that the rise in general blood-pressure was due to a strong stimulation of the medullary vaso-constrictor center is wholly wrong.
- 5. The peripheral construction is due to a localized action within the organs themselves. It occurs in a perfectly normal manner in the excised and perfused organs of animals, whose general blood-pressure has previously fallen to zero under large doses of the metal.
  - 6. With repeated intravenous injections

- of the same sized doses into an intact animal the rise in blood-pressure following each injection regularly decreases until at length a fall will be produced by each injection. This is due first to weakening and paralysis of the vasoconstrictor center, and second to a direct depression of the heart.
- 7. With a moderate dose the maximum rise in blood-pressure will be produced and a further increase in the size of the dose will not give any greater rise in the pressure. This seems due to the fact that a moderate dose gives the maximum contraction of the visceral vessels, and a larger dose does not produce any corresponding constriction of the remaining vessels of the body.
- 8. The peripheral action of vanadium on the visceral vessels is very much greater than that of barium.
- 9. With doses of epinephrine and of vanadium so adjusted that each will give the same rise in general blood-pressure, the vasoconstriction in the kidney, spleen, and intestine produced by vanadium will be very much greater in extent and duration than that produced by the epinephrine. On this basis the vanadium may possibly prove of use in internal hemorrhages occurring in these organs.
- 10. With moderate (intravenous) injections the general blood-pressure usually returns approximately to its normal level (or even below) several minutes before the constriction in the abdominal organs disappears.
- 11. There is an increase in the peristaltic movements of the intestines. But the local application of vanadium to a loop of intestine does not cause a local anemia or a contraction of the bowel wall as occurs with barium. These two elements also differ widely in their actions on the heart.
- 12. Smooth muscle, except the vessels and alimentary canal (and perhaps certain non-striated muscular elements in the spleen and kidney), does not seem to be affected by the metal. In toxic doses the substance acts upon the kidneys and gastrointestinal canal in a manner similar to that of other irritating metallic bodies.

## EDITORIAL.

## THE COMPARATIVE VALUE OF VARIOUS PREPARATIONS OF DIGITALIS.

There is perhaps no subject in connection with drug therapy which has been and is being more constantly and thoroughly studied than the action of various preparations of digitalis. We have always believed and taught that those who wish to obtain the full therapeutic value of this drug must employ one of the liquid preparations, since none of the so-called isolated principles of digitalis are capable of producing the good effects which the combined principles in tincture or infusion are known to possess. A useful summary of our knowledge in regard to this matter is contributed to the Quarterly Journal of Medicine for January, 1912, by W. E. Dixon. After pointing out the useful work which has been done by Fränkel in Germany, by Houghton in America, and by Haynes in England, he adds that the state of our chemical knowledge of digitalis is in a condition of complete confusion, and the same statement might with truth be applied to our knowledge of the various preparations of this drug which are placed upon the market chiefly by German manufacturers. of this confusion has arisen by reason of the fact that trade names have been given to isolated glucosides in such a way as to lead the physician to believe that the substance used represented one active principle of the drug, when in reality it was a combination of two or more active principles, and sometimes different names have been given to the same isolated products which have been identical in character although their mode of preparation may have differed. Thus, digitalin was isolated by Homolle and Quevenne as an amorphous product, and its great variations in physiological activity prove almost certainly that it is a mixture of active ingredients. On the other hand, Nativelle has prepared a crystalline body which he called "digitaline," and Schmiedeberg has isolated a product called "digitoxin," which seems to be a purified Nativelle's digitaline. So, too, Schmiedeberg isolated a saponine in an amorphous state which he called "digitonin," and Houdas has crystallized this substance and called it "digitalëine," although the word "digitalëine" had already been used by Schmiedeberg to describe an entirely different substance.

There can be no doubt that digitalin is one of the most, if not the most, active constituent of digitalis leaves, but as a matter of fact, when it is pure it is insoluble in water, although the addition to it of a little digitonin, which is nearly always present in digitalin tablets that are prepared for hypodermic use, renders it soluble. In other words, pure digitalin is not a commercial product, and he who uses digitalin is really employing a mixture of digitalin and digitonin. While it is generally said to be non-cumulative, we believe that there is no good evidence that this is true. Injected under the skin it often causes pain and inflammation.

· Much difference of opinion has existed as to the proper dose of commercial digitalin. Some have given it in so small an amount as 1/100 of a grain, but Dixon believes that ½- or ½-grain doses three or four times a day is the proper amount.

It is upon digitoxin that the irritant effects of digitalis upon the gastrointestinal tract probably depends. Because of its insolubility it is difficult to deal with and its irritant properties also prohibit its subcutaneous use. Its influence in contracting blood-vessels is much more powerful than that of digitalin, and, as it powerfully contracts the coronary vessels, it is in many instances contraindicated. Notwithstanding this fact, however, the French therapeutist, Huchard, has recommended the general employment of what he calls "digitoxin," which is really crystalline digitalin, and claims that it acts more rapidly than either of the other preparations which are supposed to be active principles.

Concerning the influence of digitalis upon the gastrointestinal tract, we confess that we rarely meet in our experience with disorders of the stomach when this drug is used. Indeed, we think that strophanthus is much more prone to cause gastrointestinal disturbance than is digitalis. It is true that the infusion of digitalis, if freely used, may cause gastric distress, but we do not think that the tincture of digitalis is usually guilty of such a result. As a matter of fact Dixon seems to believe that the so-called glucosidal preparations are just as qualified to produce gastric disturbance as the galenical preparations.

Concerning digalen, or soluble digitoxin, it must be remembered that this is not the same substance as the crystalline product of Schmiedeberg and Killiani. It appears in the market as an aqueous solution, containing twenty-five per cent of glycerin, and 15 minims of this solution corresponds to .05 gramme of digitalis leaves, so that the average dose is about 15 minims of this preparation, corresponding to about .03 gramme of digalen. Killiani believes that digalen is mainly digitalëine.

We have gone far enough to show the hopeless confusion which exists in the minds of chemists, pharmacologists, and physicians concerning this matter, and this confusion is still another reason for adhering to the more old-fashioned liquid preparations in the majority of cases. It is interesting, however, to add that another preparation, "digipuratum," which is made by exhausting digitalis leaves with alcohol and ether, is said to possess about half the toxicity of ordinary digitalis leaves, and to be devoid of irritant effects on the stomach. A large amount of information concerning this substitute is not at hand. Indeed, the results reported by Booz in the Massachusetts General Hospital seem to be the best to be had, but it is claimed by others that it possesses cumulative effects, and this is to be expected in view of the fact that it is claimed to contain all the active glucosides of digitalis in an unmodified form, differing only from the ordinary galenical preparations by reason of the fact that most of the inert material and saponins are removed in its preparation.

Dixon's opinion concerning digitalone,

which, it will be remembered, is not a preparation of a single active principle of digitalis, but a combination of all its active principles in an effective form, is that it has a typical digitalis action on the heart, but he seems to differ from those who have used it most in believing that it is not suitable for hypodermic use. In this we feel quite confident that he is mistaken. have used it, and seen it used hypodermically liberally in a very great number of cases, with practically no trouble whatever from local irritation, and usually with very prompt results. In at least one of the large hospitals of Philadelphia it is constantly employed by members of the staff as an efficient cardiac stimulant when employed in this manner or by the mouth. Dixon also points out that Mandell in Germany has spoken highly of its value for intravenous injection. This observer employed it in seventy patients suffering from various kinds of cardiac disease and recommends a dose of 2 Cc. We have not had any experience with this method, but this amount —that is, about thirty minims—is the quantity which we have commonly used hypodermically. When digitalone has failed to act we believe that the dose has been too small.

We are interested to note that Dixon's concluding words express our own opinion, namely, that the substitution of active principles for galenical preparations of digitalis does not seem to be justified. Of course, digitalone is practically a galenical preparation in that it represents the active principles as does the tincture, for example. The great advantage of the active principles and of digitalone over the galenical preparations is that they can be given intravenously and hypodermically.

# THE ELIMINATION OF DRUGS BY THE MAMMARY GLAND.

That the milk of nursing women is capable of carrying drugs which are taken by the mother into the body of the child has long been known. Attention to this matter is called by Les Nouveaux Remèdes

of February 24, 1912. This journal quotes Koldevijn concerning this subject, with particular reference to salicylic acid, the iodides, and mercury. It is also stated that Bucura has recorded the elimination of aspirin, iodine, calomel, arsenic, and bromine by this pathway.

Concerning the elimination of mercury a number of researches have been made both when the mercury has been given by inunction and when it has been given internally, as in the form of calomel. The results are very different in different cases, but experiments upon cows would seem to indicate that neither calomel when administered by the mouth nor mercury when used in mercurial ointment is eliminated in the milk. A number of investigations as to the elimination of lead in the milk have also been made upon cows, the conclusions reached being that the amount which passes out in the milk is exceedingly small, and only when the drug has been administered for a long time in large doses. Investigations by others upon cow's milk seemed to prove that antimony when taken internally does not escape in this manner, and the results obtained in a similar research with bismuth were also negative. Concerning alcohol. Reichert and others have shown that if alcohol is taken in excess some of it. failing to be oxidized in the body, is eliminated in the milk. Quinine may escape in the milk in very minute quantities. Urotropin when given in full dose is eliminated in its changed form in this secretion however, but an examination of milk after phenolphthalein had been taken for a number of days in the dose of from 7 to 15 grains gave negative results.

Practically all these researches have to do with the elimination of drugs in cow's milk, and therefore have only indirect bearing upon elimination in the milk of nursing women. A further research upon this subject is reported by Porcher in the same issue of Les Nouveaux Remèdes, the report having been made to a commission which was established to determine the relationship of milk to infantile mortality. Porcher believes that mercury is eliminated

very irregularly in this secretion, but that lead, copper, zinc, antimony, bismuth, arsenic, and iron are fairly constant in their Chloral, when taken by a elimination. nursing mother, rarely influences the infant, but antipyrin may be eliminated in minute quantities and produce slight effects Vegetable alkaloids are in the nursling. also occasionally eliminated in very small quantities in the milk of women, but the research is a difficult one to carry out owing to the difficulty in establishing the presence of these substances after they have been altered in the body.

#### FOREIGN CURES.

Every physician of large practice and long experience is well aware of the fact that many of his well-to-do patients sooner or later decide that the only way in which they can get rid of certain troublesome symptoms or actual disease is to pay a visit to one of the French or German wateringplaces where they believe that some supernatural power resides in the waters which come from the springs or exists in the local atmosphere. Every physician of experience also knows that most of the good which comes from such a trip depends upon the fact that the patient starts out with the intention of doing nothing else except to regain his health; whereas while he stays at home the advice of his physician is not only taken with "a grain of salt," but is often not followed if the exigencies of business or the pursuit of pleasure makes the advice inconvenient or disagreeable. It is possible at some future time we may discover that the properties of certain waters do not depend so much upon the chemical substances which chemists have isolated as they do upon radioactive principles which are too small in amount to be readily recognized by analysis. this should prove true, however, the psychic effect of a trip in search of health, if the patient is well enough to bear the journey, is often a most excellent remedy.

An interesting article dealing with this

matter is contributed to a recent issue of the *Medical Bulletin* by Dr. Stern, of New York, who "takes a peep," as he describes it, "behind the scenes of European Spas," and not only reveals much of the quackery practiced by these resorts, but with much satire reveals the weaknesses of human nature in patients and physicians. He does not mince his words, names the places to which he refers, and fails to give names only when he is dealing with individuals.

Dr. Stern evidently has not much confidence in the value of these European resorts, particularly in Germany and Aus-The places which he regards with little enthusiasm are so notable as Wiesbaden, Nauheim, and Homburg. He states that within his own recollection the medical powers have caused Nauheim "to shed its skin three times." Prior to 1890 its waters were exploited as a sure cure for locomotor ataxia. For the next two decades the waters were chiefly used for rheumatics, and since that time "the coffers of the Nauheimers have been filled with cardiopaths, real and imaginary." Stern even goes so far as to assert that some of the Nauheim physicians themselves let it be no secret that their treatment has no alleviating influence at all upon instances of organic heart disease, and he claims that it is chiefly Russians, Europeans, and Americans that fall victims to the claims of this resort. He also points out that it is a very common custom to split fees between the physician at the baths and the physician who sends the patient to the baths, and last of all ends what he has to say in regard to Nauheim by the statement that many go there never to return, and that day funerals are prohibited lest they cast a gloom upon the place, the bodies being shipped to the railroad station at night.

After touching up a number of other German resorts along the same lines he concludes with the statement that the fake sanatorium with its eccentric dietary and pseudo-religious atmosphere has no place whatsoever in the honest practice of medicine, and that the advertising methods

resorted to by the foreign spas in an endeavor to prove that they are cure-alls prevent a natural development of American spas, like our own Saratoga.

While much that Dr. Stern says may be entirely correct concerning ethical matters at many European spas, it nevertheless is a fact that a certain proportion of patients are benefited by going to them. That they possess the wonderful therapeutic powers commonly thought is of course untrue, but to believe that they are entirely useless is equally unwise.

### THE EFFECT OF PITUITRIN UPON THE UTERUS.

From time to time during the last eighteen months we have published in the Progress pages of the GAZETTE abstracts from current medical literature indicating that pituitrin is being more and more widely used because of the very specific influence which it exercises upon the uterine muscle. By far the largest amount of literature dealing with its effects on this part of the body has been in the German language, although Mummery in England and Williams have made contributions concerning it-the former in connection with its use in conditions of cardiovascular failure, and the latter with special reference to its circulatory effect in typhoid fever. Among those who have written concerning its uterine effect may be mentioned Foges and Höfstätter, and Schmid and Klotz, while Hofbauer, Stern, Gottfried, Schiffmann, and a number of others have made reports upon the uterine contractions which it induces in pregnant women. Nearly all of these reports have been favorable. Bab has reported records of its employment in the treatment of metrorrhagia and menorrhagia arising from different causes, and Scott and Ott have shown, by experiments upon animals, that the uterine muscle is directly affected by this drug.

In the issue of the Journal Médical de Bruxelles of April 18, 1912, is published a

communication made to the Royal Society of Medical and Natural Sciences in Brussels on the 15th day of April by Wevmeersch, who reports upon the employment of this drug in pregnancy and in various gynecological conditions not associated with parturition. Using pituitrin hypodermically he evidently has become an advocate of its more general use. Thus, he reports the case of a woman who had borne three children, who had premature rupture of the membranes at eight and a half months with some dilatation of the cervix, but with no progress toward delivery. The first injection of 1 Cc. of pituitrin was followed by rhythmic uterine contractions lasting for two hours. The second injection did not seem to be markedly effective, but on the fourth day after the rupture of the membranes and after a quiet night the examination showed that the cervix was somewhat more dilated, and 1.5 Cc. of pituitrin was given hypodermically. After one-quarter of an hour, uterine contractions, which were regular and energetic, developed, and labor was terminated after a period of three hours, the infant living, the delivery being normal and no disagreeable after-effects being met with. This is practically a type of the other cases which he reports, which number seven, and which seemed to prove pretty conclusively that uterine activity can usually be induced in about fifteen or twenty minutes after a hypodermic injection of approximately 15 minims of the fluid preparation called pituitrin. In the case of an unmarried woman of forty years who was suffering from menorrhagia which was very profuse, pituitrin also proved advantageous. For three or four years the menstrual epochs had amounted to veritable hemorrhages, and often lasted from eight to ten days, sometimes requiring the use of a tampon. The patient became extremely anemic as a result of this. The use of styptics was tried without much advantage. Extract of mammary gland and adrenalin were also given without benefit, and the patient's condition became so desperate that a hysterectomy was advised. Before this was done.

however, pituitrin was given subcutaneously. After the first injection of 1 Cc. the flow was materially modified. An injection was also given each succeeding day after three doses and repeated at the next menstrual epoch, whereby the menorrhagia was controlled, the flow became normal in amount, and lasted only four or five days. Two other cases of a somewhat similar nature are also reported.

Many years ago when adrenalin first appeared and a few observers reported disagreeable symptoms after its use, we pointed out in the editorial pages of the GAZETTE that no substance which is powerful enough to do good when properly used can be expected to be harmless if improperly used. This also holds true of pituitrin. It is manifest, from the articles which we have just quoted, and from other articles which have appeared, that the use of pituitrin for the purpose of producing uterine contractions before the os is dilated is not good therapeutics any more than it is wise to administer doses of ergot under such circumstances. On the other hand. where the patient suffers from general physical fatigue or uterine inertia after the os is dilated, it would seem that moderate doses of pituitrin can be given with care with very considerable advantage provided no obstruction exists which will prevent the ready expulsion of the child.

Finally, it is of interest to note that pituitrin has a very remarkable influence upon the secretion of the mammary glands. Scott and Ott have proved this upon the lower animals, and in a paper which was recently presented to the Obstetrical Society of Philadelphia a series of cases was reported in which women who were unable to nurse their children because of lack of milk secretion not only at a particular birth but with a history that this had been the case in previous pregnancies, secreted very considerable quantities of milk within a very short time after the hypodermic injection of pituitrin had been used.

It would seem to be evident that pituitrin when given hypodermically is not decom-

posed in the tissues, and while its effect is not as promptly exercised as when it is given intravenously, its hypodermic injection is nevertheless probably the best way to give it in the average case. Unlike adrenalin, too, it may be given by the stomach in certain cases with the gradual production of definite manifestations of its physiological influence.

# THE SPECIFIC TREATMENT OF INFECTIONS, WITH ESPECIAL REFERENCE TO EPIDEMIC MENINGITIS.

Flexner's triumphant clinical vindication of his theories and researches concerning spinal meningitis implies a general acceptance of his methods, and it constitutes a convincing proof of the actual value of laboratory research and animal experimentation. Flexner (Edinburgh Medical Journal, May, 1912) briefly summarizing his work in meningitis notes that more than five years have now passed since the antimeningitis serum was first employed, the production of the serum dating from the pandemic of epidemic meningitis of 1904-1909, in New York City alone no less than 5000 victims having been recorded in the winter of 1904 to the spring of 1905. The average fatality, subject to marked fluctuations, has been about 75 per cent, nor was there any method of efficient treatment prior to the injection of the serum.

It was predictable that a serum potent in animals, in which infection could be controlled, might be prepared, since similar sera have been elaborated for many infectious bacteria. None of these have, however, established themselves as of therapeutic value in the treatment of the spontaneous bacterial infections in man, if it be understood that the bacterial intoxications are not being included in this state-Though Flexner found that small animals-mice and guinea-pigs-could be protected against the meningococcus by means of an immunizing serum, this was accomplished under conditions very unlike those which obtain in epidemic meningitis The spontaneous disease was in man.

more closely simulated by a meningitis in monkeys caused by direct subdural inoculation of virulent cultures of the meningococcus. Such inoculation was followed in a few hours by severe illness and by death in from one to three days. The meningococci in part disintegrated, in part multiplied, and distributed themselves, as in human cases, between the fluid exudate and the leucocytes or phagocytes. At the height of the infection a blood invasion occurred.

This monkey infection was prevented or cured by injections of the antimeningitis serum.

In order to remove all secondary factors large rhesus monkeys were immunized: with this homologous serum success was immediate, but the immune serum had to be injected directly into the inflamed membranes. Since the meninges are highly impermeable to extraneous substances and even to the normal protein and other constituents of the blood, it seems improbable that such complex and non-diffusible substances as bactericidal antibodies could pass this membranous barrier. It has been shown that the meningococcus is not easily subject to artificial cultivation, is extremely sensitive to osmotic conditions of the surrounding medium, and succumbs to a high serum concentration. The antiserum stimulated phagocytosis and caused a more rapid dissolution of the microörganisms thus included. It was noted that the dissolution of the diplococci in cultures outside the body takes place through a process of autolysis, and the recent autolytic products are themselves poisonous. In the rapid development of severe symptoms, after subdural inoculation of virulent cultures in monkeys, the toxic elements in the autolysate play a large part. Since these effects can be prevented or set aside by the serum injections, it follows that the serum possesses a certain power of neutralizing the toxic contents of the diplococci provided it can reach their source and situation.

When the serum is injected into the membranes by lumbar puncture within a given period of time after the inoculation of the culture, in suitable amount and as often as the conditions require, the infected animals recover; when the serum is injected into the subcutaneous tissue or blood they succumb. The experiments verified the theoretical considerations. The direct injection of the serum arrests the inflammatory process and causes a rapid return of the turbid or purulent cerebrospinal liquid to a limpid state.

An immune serum prepared in the horse by alternate injections of a recent autolysate, prepared from the meningococci and dead and living cultures, developed properties similar to those present in the immune serum produced in monkeys, and it acted upon the experimental infection in monkeys in all essential respects much as did the homologous serum. The clinical test was made in the spring of 1907 and during the outbreak in Ohio covering a territory of several hundred miles. The mortality at the time of first employing the serum approached 90 per cent. The effect was immediate and almost magical. mortality at once fell below 25 per cent, and among certain small groups of cases to 10 per cent. The doses of serum employed were smaller than are now recommended, and the repetitions were carried out with less system than now.

A second trial was made in 1908-1909. Thereafter the serum was distributed throughout the world. The number of cases studied and analyzed is 1300. The gross mortality was 30 per cent. Of 199 cases injected within the first three days of illness the mortality was 18 per cent; of 346 injected from the fourth to the seventh day of illness, the mortality was 27 per cent; and of 666 injected later than the seventh day of illness, the mortality was 36 per cent. Infants under one year old or between one and two years of age possess very little resistance to epidemic meningitis. The mortality among them has risen frequently to 100 and has fallen rarely below 90 per cent. Among the serum-treated patients of tender years the case records of 125 infants below one year of age were given in such detail as to enable Flexner to

determine the effects of the serum according to the employment in the different time periods described. Of these 63 cases recovered and 62 died. There were five infants injected within the first three days of illness; all recovered. Of 16 injected within the first seven days 12 recovered. Of 104 cases which came under treatment at some period later than the seventh day. 46 recovered; the mortality in this group. while still far below that of the nonspecifically treated, is nevertheless 56 per cent. The mortality rate from two to five years among 201 cases was 15 per cent. Older children appear more prone to recovery; of 201 such cases 171 recovered, thus bringing the mortality rate to 15 per cent. This figure separates naturally into the two rates of 10 per cent among the children who were injected early and 20 per cent among those injected later than the seventh day of illness. Among adults the death-rate was 39 per hundred.

It is obviously very important to contrast the fatality of the serum-treated cases with that of similar cases treated in other ways. In this way alone can a fair judgment be secured. Epidemics fluctuate—they tend to be severer at their height than when rising or falling, hence the comparison must be simultaneous. Fortunately we possess a number of such observations made in Great Britain and Ireland, France, America, and the Far East. They are fairly uniform. At none of these places did the average mortality fall below 70 per cent, and at none did that of the serum-treated cases exceed 25 per cent. The latest figures are particularly favorable. They come from France, Palestine, and Texas, and they fall below 15 per hundred.

The serum-treated cases ceased abruptly and often with striking celerity by crisis. The percentage of those temporarily or permanently invalided was distinctly lessened. It is rare for an accessible meningococcus to be capable of growth after the second or third serum injection, and not infrequently the first injection stops all multiplication, as far as can be judged from studies of the fluid withdrawn by

lumbar puncture. As the inflammatory exudate resolves and disintegrates the imprisoned diplococci are liberated and brought under the influence of the serum. In young children especially, in which the inflammatory exudate produces an obstruction at the base of the brain, dissociating the spinal membranes from the ventricles, the infection and inflammation may be overcome in the former while remaining active in the latter. The attempt has been made, and already with several successful instances, of withdrawing the infected fluid from the lateral ventricles and of replacing it with the serum. In infants with open fontanel the needle is readily inserted into the ventricle; in older children and adults a trephine opening is made in the skull. The operation itself is apparently safe. The employment in this way of the serum should not be too long deferred. abolition of meningococcus having been accomplished the inflammation quickly subsides.

Not all strains of the meningococcus are so subject to the destructive action of the serum. Certain strains resist and multiply in spite of it. These serum-fast strains do not appear to be common. Deafness occurs early in many cases and before the treatment is instituted, but it has appeared after the treatment has been begun. Blindness, paralysis, and impaired mentality have either not occurred at all or so rarely as to be negligible as factors. In estimating this aspect of the larger question account should be taken of the fact that about three times as many persons now recover from the disease as there did formerly. It may be further stated that the recovery tends to be complete. The infection of the joints that complicates a certain small number of cases is relatively of simple and benign character. When treated by withdrawal of the contents and serum injection it is quickly arrested.

Flexner notes that there are not a few infectious processes of essentially local nature to which curative principles, whether native to the blood, or chemicals, or immune sera introduced into it from without, gain access very imperfectly, for the reason

that they pass with difficulty into the lymph, or because the infectious lesion is not accessible to the lymph. Should these lesions be treated by direct introduction of the serum by injection they might prove more subject to control. Lesions of such essentially local nature are represented by infections of the serous membranes, that receive normally a dilute and modified lymph secretion; by massive inflammations, as in lobar pneumonia and abscess-formation, syphilitic gummata, tuberculous foci, and others that suggest themselves.

The influenza meningitis in man is a highly fatal inflammation. It occurs especially among children and is attended by the influenza bacillus septicemia. The subdural injection of virulent cultures of influenza bacillus into monkeys produces a corresponding condition, which can be abated by local treatment with an anti-influenzal serum. Artifically produced, pneumococcus meningitis in monkeys is a highly fatal infection also. It cannot be controlled by antipneumococcus serum alone, while it is subject to the local injection of a mixture of antipneumococcus serum and a lytic chemical such as sodium oleate. Neither acts alone, but in combination they exert a destructive effect upon the multiplying pneumococci provided they are brought into immediate relationship with the seat of disease, as can be done by means of intradural injection.

In carrying out the method it is necessary to keep the soap apart from the serum protein, for which it possesses an affinity, and this is accomplished through the addition of a minute quantity of boric acid. This chemical does not prevent the soap from acting upon the pneumococci, for which it has a still higher affinity.

In both influenza and pneumococcus meningeal inflammation a blood invasion with the bacteria occurs. This can be suppressed by the local mode of treatment, through which, first, the eruption of the bacteria into the blood is stopped, and secondly, the bacteria already in the blood are brought under the influence of the specific antisera which pass readily from the meninges into the blood.

#### BRAIN TUMOR OPERATIONS—OPERA-TIVE RESULTS.

A particularly valuable contribution, from the standpoint of immediate mortality and remote results, from the pen of von Eiselsberg, since there is reported therein presumably all of a very large experience, is published in the Journal de Chirurgie. tome viii, No. 1, 1912. From this article useful deductions can be drawn concerning both the immediate mortality of the operation and the ultimate gain observed in those who recovered from the surgical procedure. This affords a marked contrast to tabulations incident to the collection of any cases reported in literature, since it is notorious that as a rule only the successful cases thus find their way into print. Von Eiselsberg bases his contribution upon one hundred operative cases. Of the cerebral tumors 24 were in the region of the central convolutions, five were frontal, five were in the angular gyrus. In 11 cases the operation failed to reveal the tumor. There were nine operative deaths, the majority from infection; shock, embolus, and pneumonia accounting for the others. Of 23 operative cures one-half perished shortly afterward. Eight of these had survived more than a year. One of these, exhibiting a circumscribed glioma the size of an apple, is now, seventeen months later, busy at his work. The others are more or less crippled. Of 11 cases of cerebellar tumor, seven died very shortly after operation. One case is living two years after, having exhibited a cyst, and is stated to be much better. Of tumors of the ponto-cerebellar angle there were 12 cases, with eight deaths from shock or infection. In one instance four years after operation the patient was at his work. and exhibits no trouble aside from some defect in vision and a little ataxia. One, two years after operation, is working with better vision, but a hernia cerebri. fourteen months after operation is almost blind with cerebral hernia. Another a year after operation is said to have a very good result. There are 11 cases in which the tumor was not found. Eight died quickly, one after six months. One eight years after operation exhibits betterment of vision and good general health. Of 10 cases treated by decompression, two died, two were not bettered, and six were improved.

The mortality of 77 cases of brain tumor is 62.5 per cent. As to the end results, sufficient time has not yet elapsed to definitely determine. On the whole they are not particularly inspiring. Von Eiselsberg operates in two stages. At the end of the first stage a tampon is left in place, provided the hemostasis is not satisfactory, and the wound closed without drainage with an aluminum-bronze wire. The second operation is practiced from six to ten days after the first. For enucleation of the tumor the finger is the best instrument. When there is infiltration, incision is carried through the tissue for some distance from this. Tamponing he regards as inevitably leading to infection. If the dura mater cannot be closed he transfers into it a flap of fascia. Preparatory treatment includes as an important element the preliminary administration of urotropin for three or four days, this having been found to cause the appearance of formaldehyde in the cerebrospinal fluid. Ether is used as the anesthetic, with the patient in a halfsitting position. Scalp hemostasis is provided by means of an Esmarch tube.

In considering the high mortality and the somewhat discouraging ultimate results it is interesting to know that von Eiselsberg announces himself as unqualifiedly in favor of undertaking these operations, otherwise the patient is inevitably condemned. unless a sudden death should mercifully release him, to blindness and appalling headaches. Even if the diagnosis is not absolutely established, given the presence of pressure symptoms, he believes in exploratory or decompression procedures. He regards the prognosis as worse in cerebral tuberculosis and diffuse gliomas. Epitheliomas of the dura mater are considered distinctly favorable, as are the acoustic

In relation to this communication that of

Anton and von Bremen is of interest from the standpoint of palliation. They call attention to the fact in their note that decompression does not always fulfil its promises and propose to substitute it by puncture of the corpus callosum, which they prac-A small trephine opening is made near the coronal suture: the dura mater is exposed and perforated with a large curved trocar where large veins are not visible. The trocar follows the falx and thus reaches the corpus callosum, where it forms the roof of the lateral ventricle. It is introduced into the latter, draining it. If needful the opening is enlarged and a sizable communication established between the ventricular cavity and the subarachnoid space. They thus operated upon 50 cases without an operative death, although one died shortly after. In 28 cases in which there was papilloedema great betterment followed in 19. In 26 cases coma disappeared. In 28 cases motor troubles were greatly bettered, and in 31 cases the cephalalgia was cured for a long period. Vomiting also showed similar amelioration. The results were least favorable in ventricular tumors. to which class belonged eight of their series. Five were tumors of the hypophysis, nine were external tumors, 17 were cases of hydrocephalus, two of epilepsy, two of the corpora quadrigemina.

### REPORTS ON THERAPEUTIC PROGRESS.

#### PITUITRIN IN LABOR.

ALFRED STUDENY (Wiener klinische Wochenschrift, No. 51, 1911) reports on a large number of labor cases and cases of abortion treated by pituitrin at the midwifery hospital in Brünn. Pituitrin is a watery extract of the hypophysis which pharmacologically and in some of its physiological effects is similar to adrenalin. V. Frankl, Hochwart, and Fröhlich found that in rabbits, both during pregnancy and when giving suck, injections of pituitrin led to an increased excitability of the muscles of the bladder and hypogastric nerve, and to the production of strong and protracted contractions of the uterus. They therefore recommend the use of pituitrin in gynecological and urological practice. This recommendation has been fairly widely followed with good results. In the author's cases Parke, Davis & Co.'s preparation was used. The original dose of 0.6 Cc. was found to be too small, and as a rule 1 Cc. was given in the latter cases; larger doses were given in the third stage of labor without harmful result, but without any special advantage.

The effect of pituitrin in exciting labor pains was usually apparent in from three to five minutes, but was in one case postponed to eighteen minutes. As a rule, the pains set in moderately, increased gradually, and began to weaken after about an hour. In a few cases, but never in those in the first stage, tonic contraction of the uterus occurred, and persisted in one instance for as long as five minutes.

Pituitrin was used in 89 labor cases. In the first stage the effect in strengthening the pains was very marked, and was very noticeable in one case of a primipara thirtyseven years of age. In five of the cases the effect, though marked, was only temporary, and in spite of repetition of the dose it could not be stated with certainty that the labor had been shortened in duration. In the expulsive stage pituitrin gave excellent results in thirty-four instances, most of them protracted cases: in fifteen the birth followed during the first quarter of an hour after the injection, in thirteen during the next hour, in six during the next two hours. On the other hand, the extract failed in some cases of abnormal resistance on the side of the soft parts or bony pelvis, and failed also in eight cases of primary uterine inertia.

Pituitrin was further given in five cases of rigidity of the soft parts, six cases of disproportion between the head and the pelvis, three of craniotomy with contracted

pelvis, nine of placenta previa, six of induction of labor. In two cases the pains stopped after a short time, and in a third pituitrin had no effect. In the cases of induction of labor, pituitrin was used in combination with operative measures, and a definite opinion as to its value could not be formed. In one case, however, of a thirty-eight-year-old 4-para, who in previous labors had had few pains and had been delivered by forceps, and had suffered twice from severe postpartum atony, labor pains set in strongly after 3.6 Cc. of pituitrin had been given in the course of fortyeight hours, and forceps were only applied with very little force, while the puerperium was normal. In the whole series of cases in which labor ended spontaneously there were only two of postpartum hemorrhage, and none of atony. In the operative cases, however, there was a large proportion of cases of hemorrhage, nearly all of them cases in which pituitrin had failed to act. These facts suggest a tonic action of pituitrin on the uterine muscle continuing after labor. The results were not especially good either when pituitrin was given only after delivery, or in cases of early abortion. Pituitrin was not found in any case to be harmful to the child.

On the whole the author considers pituitrin to be the most reliable agency for strengthening labor pains which we possess, and also considers that given during labor it lessens the likelihood of postpartum atony. It is very unreliable when atony is developed. Pituitrin is non-poisonous. It is without effect in the production of uterine contraction during the early months of pregnancy.—British Medical Journal, March 9, 1912.

## THE EFFECT OF CAFFEINE ON THE CIRCULATION.

SALANT in the Journal of Pharmacology and Experimental Therapeutics for March, 1912, states that the intravenous injection of 15 to 25 mgs. of caffeine per kilo in animals was followed by a fall of blood-pressure amounting to 7 to 35 per cent in

most cases, which was, however, transitory in character. In some animals the blood-pressure remained unchanged after such doses. A moderate rise of blood-pressure was rarely observed. Experiments were also conducted to test the effect of various anesthetics on changes in blood-pressure caused by caffeine. Some experiments were also made under local anesthesia.

Small doses of caffeine aid the action of nitrites on the circulation. A secondary rise was observed in a small number of cases under these conditions.

The effect of acetanilide is markedly increased when caffeine is given at the same time or when injected soon after. creased rate and irregularity of heart action was also observed when acetanilide was followed by caffeine. Similar results were observed when caffeine was injected intravenously after ethyl or amyl alcohol, but depression of the circulation was more marked after the latter. BaCl, injected intravenously after previous administration of caffeine was found to be toxic even in very small quantities, and the blood-pressure dropped suddenly; 0.5 to 1.0 mg. per kilo proved fatal, while much larger quantities of this salt administered to controls caused some disturbance of the circulation. but was not fatal.

#### THE TREATMENT OF ASIATIC CHOL-ERA, OR OF ACUTE HYPOEPI-NEPHRIA, WITH ADRENALIN.

NAAMÉ, of Tunis, in Concours Médicale, No. 13, 1912, publishes an interesting memoir, in which he says that the two great symptoms of cholera, whether infantile, Asiatic, or sporadic, viz., vomiting and especially diarrhea, to which may be added algidity, asthenia, cramp, etc., are indubitable signs of suprarenal insufficiency, or, in other words, of acute hypoepinephria.

'According to his experience of cholera, injections of adrenalin, combined with Hayem's serum—or of glucose serum in cases of anuria—are of real service. The same applies to cases of non-Asiatic cholera. Suprarenal opotherapy constitutes

the best treatment of the choleraic syndromes, no matter whether they are due to the specific bacillus or to another species.

Adrenalin stimulates the functions of the suprarenal glands and the formation in the organism of opsonins or alexins, which are necessary to phagocytosis.

The adult hypodermic dose of adrenalin is in slight or average cases from 3 to 4 milligrammes in twenty-four hours for three to four days. It is even better in acute cases to inject on the first day 5 to 6 milligrammes, the cholera patient being able to tolerate large quantities of adrenalin.

In severe cases, accompanied by collapse, the author recommends the intravenous injection of 2 to 3 milligrammes of adrenalin diluted with a saline or glucose solution. The injection is to be repeated a second time within twenty-four hours. In addition to this he recommends that one should take as a prophylactic measure, in epidemics, 3 to 5 drops of the solution 1:1000 every morning.

According to the author his experiments with adrenalin medication are conclusive; if the disease is in its opening stages development is arrested. The algidity tends to disappear and the general condition improves. The period of reaction or complications is suppressed, convalescence starting. Within a week the patient can take soups, egg, etc.

The author insists on the point that absolute rest is an important factor, since even removal to the hospital is likely to aggravate the symptoms in a slight attack, and even to cause the death of a patient in a serious condition. Dr. Naamé has used this method with twenty patients, all of whom were cured. He insists on the use of adrenalin as against that of the extract of the whole gland, and concludes by saying that in certain infectious diseases, such as cholera, which represent a state of glandular insufficiency, opotherapy will advantageously replace serotherapy, when this has failed, acting as a phagocytic, microbicide, and antitoxic medication.

From the patients treated Dr. Naamé reports five persons of the same family who

were seized with acute diarrhea, characterized by twelve to fifteen stools daily. After daily injections of 3 milligrammes to each patient for three days and liquid nour-ishment during forty-eight hours, recovery took place without the cholera having completed its evolution.

In another case, Dr. Naamé was called to a child of eight months who was suffering from sudden diarrhea and had had five to six stools. The mother having declined to allow the adrenalin treatment, the diarrhea increased, vomiting took place, and at two o'clock the child was pale and cold. Two hours after the injection of ½ milligramme of adrenalin in 25 grammes of Hayem's serum the child was warmer. The anuria ceased during the night, and a second injection of ½ milligramme of adrenalin on the following day concluded the treatment.

Finally the author mentions the case of a woman showing all the symptoms of the disease, vomiting, acute asthenia, diarrhea, cramp, algidity, anuria, etc. Daily injections of 3 milligrammes of adrenalin enabled the patient to leave her bed after five days and to walk about the room. She could take milk, vegetable soup, etc.

#### THE VALUE OF ALBUMIN MILK ("EI-WEISS MILCH") IN THE NUTRI-TIONAL DISTURBANCES OF INFANCY.

HEMPELMANN gives an excellent summary of this subject in the *Interstate Medical Journal* for May, 1912.

"Eiweiss Milch" (variously called albumin, casein, or protein milk by American writers) consists, briefly, of the curd from a liter of whole milk, added to one-half liter of fat-free buttermilk, plus water to make one liter, and maltose added in various amounts, according to the individual case.

It is now approximately two years since Finkelstein and Meyer, the originators of albumin milk, first published their results with this form of food, and since that time it has been given a trial in dozens of clinics, both in Europe and in this country. After this lapse of time, it seems probable that some accurate estimation of its value might be made, for the literature on the subject is voluminous. In looking over some of the more recent literature on this topic, one cannot fail to be impressed with the generally favorable attitude of most of the writers toward albumin milk, even though there are still some who are not fully convinced that it has any special value. Many of the writers substantiate the claims of Finkelstein and Meyer that it is the best substitute for mother's milk so far discovered, while practically all find it valuable in at least some one of the various forms of nutritional disturbance in infancy.

In order to obtain the best results with this food, it seems necessary to adhere very closely to the directions given by Finkelstein and Meyer, not only as to the preparation of the food, but also in regard to its dosage, and the proper addition of the carbohydrates. The main points to be remembered regarding its proper use are that the dosage should be rapidly increased up to 180 to 200 Cc. per kilogramme of the child's weight, and that the carbohydrates should also be rapidly increased from the 2 to 3 per cent ordinarily used at the beginning of treatment to 5 to 7 per cent, only reducing the carbohydrates below 2 per cent in the very severe cases. This increase in the food quantity and carbohydrate content may be made without waiting for the stools to become normal.

Failure to obtain good results with albumin milk Finkelstein and Meyer attribute ordinarily to one of the following errors in technique, namely: (1) using too small a quantity of albumin milk in the beginning or increasing the amount too slowly; (2) adding carbohydrates too late or in too small an amount; (3) reducing carbohydrates too much or too often on account of an apparent return of the original nutritional disturbance.

Abt, in speaking of his visit to Finkelstein's clinic, comments on the excellent results obtained here with this method of feeding, which he says is "successful in nearly every case." He also comments on the low mortality and the healthy appearance of the infants after a course of this treatment, although many of the cases would have been considered very unfavorable on admission.

Grosser reports 52 cases, with only five failures, and says the only ill effects he has noticed were occasional signs of the exudative diathesis, and, when the food was long continued, the infants became pale and anemic looking.

Rollet reports in detail his experiences with this food in the Berlin Charité Polyclinic, in cases which he regards as furnishing relatively unfavorable material, since in a clinic the cases cannot be closely watched and controlled. He used the food in 95 cases, only 56 of which can be considered, since the others either did not return or changed the food of their own accord. Of these 56 cases, 31 were "dyspepsias" mostly in children between three and six months of age, in whom the diarrheas ceased within the first few days. In 11 of these cases, as an experiment, there was no carbohydrate added during the time that the albumin milk was given, and two of these cases died suddenly, in collapse. Otherwise the results were uniformly good. The rest of the 56 cases were classed under "intoxication," "decomposition," and "Mehlnaehrschaden" (starch nutritional disturbance), in all of which the results were excellent. Two cases of "decomposition" died before sugar had been added to their diet, but these were extremely severe from the start and probably could not have been saved by any other All the cases of decomposition were very much under weight and had had numerous other foods tried without result: and yet these cases not only gained on albumin milk, but were later able to take the ordinary foods again. In summing up, Rollet says that in his opinion, in spite of occasional bad results, albumin milk is an exceptionally valuable food, and adds that a food which so constantly controls severe and obstinate diarrheas, even though it cannot always ward off death, is surely a valuable therapeutic aid.

Albumin milk was originally stated to be valuable only if used in infants over eight weeks of age, yet Benfey tried it in 83 infants under three weeks of age, and came to the following conclusions: (1) With albumin milk you get better results than with any other artificial food; (2) it should be given in the amount of 150 to 200 Cc. per kilo of weight; (3) the sugar should rarely be below 3 per cent, and it is usually better to start at 5 per cent and go up to 6 or 8 per cent; (4) maltose is better than cane or milk sugar.

Welde used albumin milk in 48 cases, and of these 25 were dyspepsias, with 23 recoveries and two unimproved; 20 were cases of decomposition, with 16 recoveries and four deaths; three were cases of intoxication, with two recoveries and one death. He concludes that this food is indispensable in pediatrics.

Grulee reports 25 cases of nutritional disorders (all chosen because of their severity, and his conviction that they would not get along on other foods) with 18 recoveries, three failures, and four deaths. Of the deaths only two were uncomplicated nutritional disorders, and of the failures no infant was on albumin milk longer than twelve days. Fifteen of the 25 were four months or under, and most were marantic.

In comparing the results obtained with breast milk and the new food, Doeblin gives the following statistics: Of 37 very severe cases fed on breast milk, 20 died (14 of these during the first week's treatment) and 17 got well—that is, about three-fifths died and about two-fifths recovered. equally severe cases treated with albumin milk, 33 died (about 60 per cent), and of these 25 died within the first week of treatment, the cases being so severe that he believes nothing could have saved them. He thinks the foregoing statistics sufficiently indicate the value of albumin milk, and believes that in some cases it is superior to breast milk.

Brady reports 20 cases in which five marantic babies made brilliant recoveries, one died, and all the rest made excellent recoveries.

Beck used albumin milk in 175 cases, 110 of which were dyspepsias, eight intoxications, four enterocolitis, and 17 decompositions. Of these, 12 died, and he adds that he does not think anything could have saved them, because four were moribund when admitted, four had on admission a bronchopneumonia which was the cause of death, three were the severest kind of atrophy, and one was a bad case of intoxication. He believes this food to be the best of all artificial foods.

Heiman, before the New York Academy of Medicine, reported 42 cases, 20 of a very severe type, with nine deaths, four of these being practically moribund on admission (dying within three days). He concludes albumin milk represents a distinct advance in the therapeutics of these conditions. In discussing this report, Morse said that his experience had been limited, and he could not explain the action of this food, but he had seen it do good sometimes. Kerley, Chapin, and Koplik also discussed this paper, Talbot reporting very favorably and Chapin saying he thought it had a restricted value in certain cases. Kerley believed it more easily assimilated than cow's milk by older children with acute intestinal disturbances, and Koplik said he was not especially impressed with the results from albumin milk.

### CARE AND CONTROL OF THE ALCOHOLIC.

Lambert, in the Boston Medical and Surgical Journal of April 25, 1912, says that the treatment which was given to him by Towns, and which he has published, he frankly admits is the one which seems in his experience to more quickly and thoroughly unpoison the mind and system from alcohol than any other treatment he has yet encountered. It hardly seems necessary to go into the details here. Briefly stated, it consists in the hourly dosage of a mixture of belladonna, hyoscyamus, and xanthoxylum. This mixture is given every hour, day and night, for about fifty hours. There is also given about every twelve hours a

vigorous catharsis of C. C. pills and blue mass. At the end of the treatment, when it is evident that there are abundant bilious stools, castor oil is given to clean out thoroughly the intestinal tract, and the reconstruction treatment of tonics is begun.

During this treatment it is essential that each patient be treated as a separate individual. One cannot treat them in a mass as alcoholics. They are individuals differently poisoned, and each one with his separate idiosyncrasies. The older they are, and the more thoroughly poisoned by alcohol, the more one will have to stimulate them during the treatment, and the more slowly will one taper them off from their whisky. The younger and more vigorous they are, the more quickly can one cut them off from their alcohol. The greater the poisoning and the more long-continued it has been, the more carefully will one watch them and quiet them with hypnotics. If the stomach is in a state of alcoholic gastritis, one will have to let this subside before beginning active medication.

How this mixture of belladonna, hyoscyamus, and xanthoxylum acts, Lambert frankly says he does not know. If any one of the ingredients is left out, the reaction of the cessation of desire is not as clear-cut as when the three are mixed together. The amount necessary to give is judged by the physiologic action of the belladonna it contains. When the face becomes flushed, the throat dry, and the pupils of the eyes dilated, one must cut down the mixture or cease giving it altogether until these symptoms pass by. One must, however, push this mixture until these symptoms appear, or we will not obtain a clear-cut cessation of the desire for the narcotic.

Patients who are very sensitive to mercury are difficult patients to treat, because the liver seems to require that peculiar action given to it by mercurial purges to be properly stirred and properly to excrete substances that are stored up in it, and finally be so stimulated that it pours out its bile in abundance and shows that the desired effect has been reached. The liver is the great chemical factory of the body, and the metabolism that goes on there is, in the great mass, still an unknown factor to us, but the method which is here outlined, though it may seem to be empirical, does not produce the effect of a stimulation or rearrangement of the hepatic functions so that the metabolism of the individual comes back rapidly as near to normal as is possible for that individual. The patients realize and acknowledge that they do not desire their narcotic, and they do not feel the need of it. In some of them, a small percentage, there is an actual physical disgust at the smell or sight of whisky just after they are through with this treatment. Whether or not it is an autosuggestion of an impressionable type of patient, Lambert asserts he does not know. It probably is. It always has been a voluntary expression on the part of the patient. Lambert has never suggested to one that such would True it is that after they are through with this treatment they are very much more sensitive to alcohol. Many who have been long accustomed to take without apparent effect a steady daily dosage of alcohol sufficient to intoxicate many others. have found after this treatment that a small amount of alcohol quickly affected them, and affected them beyond the physiologic action, so that they themselves realized that they were rapidly poisoned. As, for example, one man who reverted after Lambert had given him the treatment, while previously he could go on a protracted hard spree of several weeks without having had delirium tremens, after a spree of not more than usual severity developed delirium tremens after three days.

There is nothing in this treatment to prevent alcoholics from going back to their alcohol. It sobers them up absolutely, it puts them on their feet in a condition so that they do not mentally or physically crave their narcotic, but as before stated, there are no chaperone pills connected with the treatment by which they can be prevented from going back to their indulgence. The weakness of their will and personality, the weakness of their mentality, is not immediately fully reconstructed. The after-

treatment, according to Lambert, is as important as the medicinal, and in his experience there is no question that those who go through a course of physical exercise and physical training for several weeks or months are those who soonest return the nearest to normal. The physical necessity of food, the building up by increased daily addition of new food, the burning up of waste products by exercise, and the proper elimination through this same muscular exercise, all bring about a rapid and vigorous building up of body and mind. treat them as invalids, to treat these people as nervously down and nervously to be mollycoddled, is, in Lambert's opinion, a mistake. They should be treated as physical and mental wrecks, to be built up physically and mentally by as vigorous a process as each individual will stand without injury.

Lambert states he has often been asked what figures he could show regarding the effect of this treatment. When he was giving it in Bellevue Hospital, he gave it to any one who came to him and desired the treatment. There was no endeavor to pick cases, there was no difference made because of the mental condition of the patient or of his previous habits, or because of his possible return to unfavorable environment. There were 131 patients treated. Eighteen months afterward he endeavored to look up the records of these men: 43 could not be found, two were dead, and one was insane. Of the 85 in whom they could judge accurately of the results, 67 had reverted and 18 had remained abstinent. That is, 78.8 per cent had reverted and 21.2 per cent had remained straight. This is the severest test, Lambert asserts, that he knows, and that one could succeed in the ordinary alcoholic wards of Bellevue Hospital in one-fifth of the cases is a far better result than one could expect from the usual methods of treatment. Among those who have been given this treatment in a private institution during the past two years, having voluntarily sought the treatment, the results have been much more encouraging. Among these cases the percentage is practically reversed.

In 375 patients there have been 46, or 12.2 per cent, known relapses. It has not been possible to follow these patients as accurately as those in Bellevue, but even if we double the percentage of known relapses, the results are most encouraging.

## ARTIFICIAL PNEUMOTHORAX AS A TREATMENT OF PULMONARY TUBERCULOSIS.

In the Archives of Internal Medicine of April 15, 1912, ROBINSON and FLOYD state that twenty-eight cases of phthisis have been subjected by them to artificial pneumothorax therapy within the past two and one-half years. With three exceptions all of the cases have been advanced ones which had previously failed to respond to methods of therapeutic hygiene.

The last eight cases have been treated by nitrogen injection too recently to draw conclusions as to the ultimate result of the treatment. It may be said, however, that with the exception of the three cases in which a pleural space could not be established, a distinct relief of symptoms has been the immediate result of the lung compression in practically all of the reported cases of their series. The tuberculous process has been brought to a standstill in at least six of the cases which have been under constant observation and continued treatment. In two instances there has been cessation of all activity in both lungs.

The promptness and willingness with which most of the patients responded to summons for repeated injections were conclusive evidence at least of the symptomatic relief attending the therapy. This might have been credited in part to psychic influences had there not been a corresponding improvement in the objective signs revealed by repeated examinations.

From experience with the earlier cases they have been led to the employment of more frequent injections. It cannot be denied that this factor is of paramount importance. The completeness of the compression is thus more nearly attained; furthermore, the partial mobilization of the

lung permitted by the absorption of the nitrogen is promptly prevented by its early renewal.

The fatalities recorded were due to the unarrested progress of the disease in certain of the more advanced cases. In no instance was death referable in any way to the pneumothorax therapy.

"Pleural eclampsia" (Forlanini), or a reflex inhibition of the heart through vagus irritation from the pleura, is a danger to be considered in this treatment as in other therapy requiring thoracentesis. They believe that it may always be prevented by anesthetizing the pleura.

Air-embolism may result from the direct introduction of gas into a pulmonary vein. They believe this should never occur if the technique they describe is faithfully observed.

The authors have experienced no accidents, and believing that they are always avoidable, they conclude that pneumothorax therapy is a safe procedure.

Pulmonary tuberculosis when essentially unilateral, and resistant to hygienic treatment, is in a certain number of cases arrested by the continuous employment of artificial pneumothorax therapy. Their treatment has been of insufficient duration to permit them to claim a permanent cure in any one case. They believe that such is possible, however, as proved by the recent reports of Brauer and Spengler.

They conclude, therefore, that artificial pneumothorax is entitled to definite recognition in the treatment of pulmonary tuberculosis.

#### THE EFFECT OF PRESSURE-LOWERING DRUGS AND MEASURES ON SYS-TOLIC AND DIASTOLIC PRES-SURE IN MAN.

LAWRENCE in the Archives of Internal Medicine of April 15, 1912, reports his studies on this subject and concludes as follows:

1. The reduction of systolic pressure in cases of hypertension by the use of nitrites, venesection, electricity, or hot air is accompanied by a fall in diastolic pressure

amounting, as a rule, to approximately one-half the systolic fall.

- 2. Such a reduction produces a coefficient of pressure more nearly approaching the normal than does the coefficient under the conditions of hypertension.
- 3. Sodium nitrite reduces diastolic pressure more rapidly than the more complex compounds, thus causing a shorter initial diminution of pulse-pressure than is obtained with mannitol or erythrol. Its effect on the pulse is more marked than that of the other two drugs. The duration of its action is slightly less.
- 4. None of the nitrite group is efficient for maintaining a pressure at a permanently lowered level, as a tolerance is soon acquired and increasing the dose is apt to cause unpleasant symptoms.
- 5. Venesection has a more lasting effect in lowering the pressure than have any of the drugs considered in this paper. The diastolic pressure is depressed longer than the systolic, the pulse-pressure thus being increased.
- 6. The effect of hot-air baths, electriclight baths, and treatment with high-frequency currents is uncertain. A fall in pressure, if produced, is transient.
- 7. Vasotonin is not certain in its action and is not safe to use in cases showing marked hypertension, an increase of which might bring about untoward results.

### ULTRAMEDICAL OR ULTRASURGICAL TREATMENT FOR ECLAMPSIA?

The Medical Record of April 20, 1912, reminds us that a very few decades ago puerperal eclampsia was regarded on all sides as an affection with a practically guaranteed high average mortality under any and every plan of treatment. The large number of theoretical view-points as to the nature of the disease seemed to justify the employment of the most diverse measures of treatment. The fact that seemingly moribund patients recovered under many plans of management has been responsible for their continuance even in the absence of sound theory and perhaps at times in oppo-

sition to all tenable theories. But whenever any plan was tested on a sufficiently large material, and year in and out, it became apparent that the disease varies much in severity with the particular locality and year, and it began to appear that any real advances in therapeutics must necessarily be extremely hard to appreciate. There can, however, be little doubt to-day that the mortality of eclampsia has slowly been brought down by strict adherence to two completely opposite plans of treatment, which may be termed the ultrasurgical and ultramedical. To whatever degree eclampsia may depend on a general pregnancy toxicosis it is recognized that its efficient cause is really labor itself, or better the uterine contractions which comprise the latter and which may precede or follow it to a certain extent. Both this fact and the possibility that the fetus and placenta may be the source of toxic material appear to demand the immediate evacuation of the uterus. This was accomplished at first by the simpler means of hastening labor and eventually by accouchement forcé in the widest application of the term, even including vaginal and abdominal hysterotomy and hysterectomy. There seems no good reason to doubt that much life, maternal and fetal. has been saved by these heroic measures. Surgery has not stopped here, for in certain cases where renal stasis seems to prevent the hope of recovery the kidney itself is attacked by the operation of decapsula-Comparatively recently the mammary glands as a probable source of the toxemia have been excluded provisionally from the circulation by a subcutaneous operation.

At a recent meeting of the Berlin Gyne-cological Society (Berliner klinische Wochenschrift, March 18, 1912) the veteran Olshausen spoke very pessimistically about eclampsia. We know nothing, he said, of its nature and hence have no rational treatment. Rapid evacuation of the uterus, an empirical measure, has secured about one-third better results than were obtainable before its introduction. We have allowed a valuable resource of the past to fall into

disuse—that is, bleeding up to 500 to 600 Cc. In discussion it was suggested that the benefit derived from cutting operations was due really to the coincident loss of blood.

The medical treatment has been tested only on a relatively small number of cases. but has been followed up for years in certain localities with enough betterment in mortality percentage to startle those who have never seen the reports. Stroganoff has now treated about 400 cases with his narcotic method, which aims solely at jugulating the convulsions by a graduated use of morphine and chloral so given as to secure the greatest possible economy in dosage. The patients are also strictly isolated from the outer world in every possible way. The mortality at his hands has been but a fraction over 6 per cent. In the United States some of the leading obstetricians are depending upon the use of veratrum viride, which by lowering the high blood-pressure which appears to underlie the convulsions serves also to suppress the latter. death percentages have been secured under The only criticism of these figures is found in the claim that in certain favored localities eclampsia is much less malignant than in others.

If puerperal eclampsia is really an example of anaphylaxis and not an ordinary toxemia the rational treatment should be somewhat modified. In an anaphylaxis the patient is not menaced by a large amount of toxic material which necessitates all sorts of meddlesome eliminative procedures. She has simply become sensitized during an earlier pregnancy or during the early stages of the present pregnancy to substances normally present in all gravidæ. Whether or not an anaphylactic shock proves fatal will depend in part on factors entirely beyond our ken. The naturally high mortality of the analogous affection in cows has been practically wiped out by insufflation of air into the milk ducts. German farmer no longer troubles to send for the veterinary, but inserts a turkey quill into a milk duct and by means of his bicycle pump forces air into the latter. But in the cow, at least in the severe type of

eclampsia, convulsions do not occur, but instead a collapse or, as it is commonly termed, a paralysis. From all points of view the convulsions seem to be the real object of treatment in mankind. uterine contractions beget the convulsions. If these be made to cease by rapidly evacuating the uterus the prognosis is good. The earlier in the history of the convulsions the uterus is emptied the better the results. On the other hand, it may be possible to control the convulsions without greatly interfering with labor. be effected by keeping down the bloodpressure (by veratrum or copious venesections) or by so benumbing the reflex activity with narcotics that convulsions no longer occur. There are other pernicious factors aside from blood-pressure and convulsions which are reached by neither the ultrasurgical nor the ultramedical plans of treatment. But it will doubtless be found that cases of this sort occur largely in those patients who have exhibited pregnancy toxicosis long before term. Some of these women, if not most of them, could have been saved by early interruption of pregnancy.

### ACETONURIA IN CHILDHOOD AND ANESTHETICS.

In the Proceedings of the Royal Society of Medicine for March, 1912, FREW writes on this subject and answers the question, Can this acetonuria be prevented? Most decidedly, yes. Beesly has recommended the exhibition of sodium bicarbonate before and after the anesthetic for this purpose, but an alkali cannot in any way make up for the carbohydrate starvation: it can but neutralize the resulting acidosis; it does not prevent its continued formation; it serves but as a cloak—the hypodermic of morphine in acute pain. Dr. Guthrie, to whom we are under a deep debt for bringing the subject of postanesthetic poisoning into prominence, has advocated the administration of nutrient enemata up to within two hours of operation, and if this enema contains enough absorbable carbohydrate, the effect would be obtained. Frew indicates in his paper what he believes to be the correct method as follows:

The "carbohydrate starvation" must be done away with—not by giving starchy foods, which are bulky, and therefore not available when the latent period before they can be absorbed is long; nor yet by giving cane-sugar or milk-sugar, which are not bulky it is true, but they must be prepared for absorption, and hence their use occasions some delay. Not to those, then, do we look, but to dextrose, which is our ideal remedy—it is not bulky, it is ready for absorption without preliminary preparation; and even when the disorder of metabolism is already set up, it can cause a return to the normal within twelve hours.

Therefore let us see to it rather that there is "no carbohydrate starvation either within four hours of the operation or at any period afterwards," and thus have the child in as healthy a condition as possible both during the time of anesthesia and in the period following it.

#### A STUDY OF THE RENAL EPITHELIUM IN VARIOUS TYPES OF ACUTE EXPERIMENTAL NEPHRITIS.

MACNIDER in the Journal of Medical Research for April, 1912, concludes from the experimental data presented in his investigations:

- 1. Cantharidin, potassium dichromate, uranium nitrate, and sodium arsenate produce in the dog an acute nephritis in which both the vascular and the epithelial elements of the kidneys are involved.
- 2. The histological study shows that the vascular element of the kidney is first affected, and that the rapidity with which the epithelium is involved depends principally upon the nephrotoxic substances employed in producing the nephritis.
- 3. Uranium nitrate and potassium dichromate usually produce a tubular nephritis much earlier than either cantharidin or sodium arsenate.
- 4. In the early stages of the nephritis from these poisons, when there is anatomi-

cal evidence of vascular injury and either slight or no anatomical evidence of epithelial injury, the output of urine is increased.

- 5. Later in the nephritis, when histologically the vascular pathology may not be increased in severity, but when the epithelium has become involved, the output of urine is reduced or an anuria is established.
- 6. Those nephrotoxic substances which have the most marked affinity for the tubular epithelium are the substances which most rapidly cause either a reduced output of urine or an anuria, while those nephrotoxic substances, such as arsenic, which cause an early and a pronounced vascular injury, with late epithelial involvement, are the poisons which have the least tendency to produce an anuria.
- 7. In the experiments detailed in this study which have shown either a pronounced decrease in the output of urine or an anuria, there has constantly been associated epithelial changes, which would produce in different degrees an obstruction of the lumen of the tubules.
- 8. In those experiments in which the output of urine has not been decreased, and in those experiments in which the output of urine was increased beyond the normal, such epithelial changes either did not exist or they were histologically slight.

#### THE USES OF TUBERCULIN IN PUL-MONARY TUBERCULOSIS.

LATHAM, in the Proceedings of the Royal Society of Medicine for March, 1912, defines the class of case for tuberculin therapy.

Although he would by no means go as far as some authorities who hold that tuberculin should not be given whenever there is evidence of secondary infection, yet he believes he cannot emphasize too strongly the necessity for care in the selection of cases for this treatment. There can be no doubt that tuberculin is capable of doing a great deal of harm, not only when improper dosage is employed, but also in comparatively large groups of cases. At

one time he was not infrequently asked to demonstrate the value of tuberculin in cases which were obviously hopeless. To expect tuberculin to produce a miracle is foolish. and any expectation of good from a course of tuberculin in a series of advanced febrile cases in which there is marked secondary infection is foredoomed to disappointment. His experience suggests that tuberculin will not only do no good but will cause harmful results in those cases in which there is more or less constant autoinoculation, for example, cases in which frequent attacks of prolonged coughing or other symptoms produce a series of autoinoculations which are beyond our control. If we give tuberculin in such a case we increase what may already be an excessive dose of the patient's own bacterial products, and so merely court disaster. We must not, however, generalize too freely, for every case has to be considered on its individual merits. spite of this we may say that the ideal cases for tuberculin therapy are the cases of recent origin with little constitutional disturbance and chronic afebrile cases—that is, the cases in which walking exercise to the extent of a few miles produces no febrile reaction.

Another class of case in which tuberculin is of great value, in that it may enable the patient to "turn the corner," is the class in which there is no real progress in spite of more or less prolonged treatment on sanatorium lines, but in which the patient is just holding his own. These, of course, are the classes in which the majority of observers have obtained the best results. He thinks. however, that tuberculin has not been given sufficiently in febrile pulmonary tuberculosis, although its use in such cases is much more difficult and calls for mature experience and judgment. In those cases in which there is much irregularity with regard to the rises of temperature, and in which all our efforts fail to control this symptom, tuberculin does harm. It is, however, possible sometimes to control the cause of these irregular autoinoculations. For example, a harassing cough involving much movement and fatigue may some-

times be controlled by the use of sedatives, such as codeine, or the continuous inhalation of antiseptic remedies; active larvngeal tuberculosis may be controlled by vocal rest, or frequent vomiting may be relieved by appropriate remedies. Or, again, it is possible in a certain number of cases to control the autoinoculations by means of what is called by the unfortunate name of artificial pneumothorax or compression of the diseased lung by means of nitrogen. When we can control the amount of autoinoculation in this way, and also in cases of febrile disease in which the autoinoculations are more or less regular, his belief is that tuberculin may often greatly improve the chances of recovery, and he urges its wider use in such instances at the hands of experts.

One further point under this heading: In all forms of tuberculosis in which there is definite caseation and breaking down of the tissues, tuberculin will accentuate the intoxication if there is no outlet to the necrosed products, and similarly in pulmonary tuberculosis with marked and active caseation, the use of tuberculin accentuates the activity of the process. In some cases this is of value, as it leads to rapid breaking down of a localized area with cavity formation and subsequent healing.

Latham's experience of the last six years, which included several hundred cases, has led him to form the impression that the careful use of tuberculin gives valuable results in the treatment of pulmonary tuberculosis. Its use is not attended with dramatic effect except in occasional examples of febrile disease or laryngeal tuberculosis, nor does its use tend to hasten the apparent arrest of the disease or shorten the length of treatment required, except in certain instances in which the patient is just holding his own but is making no real On the other hand, tuberculin, in conjunction with ordinary methods, will lead to the disappearance of tubercle bacilli from the sputum in a larger proportion of cases than ordinary methods alone, and in his experience diminishes the number of relapses, or, in other words, establishes a

higher degree of immunity. In view of these facts, he agrees with those who hold that the best treatment for pulmonary tuberculosis is tuberculin treatment in conjunction with what is called sanatorium treatment, either at a special institution—as is necessary in a considerable proportion of cases—or at home.

### THE INUNCTION TREATMENT OF SYPHILIS.

FRESHWATER in the *Practitioner* for April, 1912, tells us that during the inunction course attention should be directed to the following points:

- 1. Shaving Hairy Skins.—Previously to commencing a course of inunction the legs and arms of patients with much hair should be shaved, in order to avoid the occurrence of folliculitis; this is most important, as when it has not been attended to the subsequent results are often very unpleasant, and some patients have to give up their treatment, their condition having been made much worse with the subsequent inunctions.
- 2. Teeth.—The patient should go to his dentist to have all tartar removed and all decayed teeth stopped.
- 3. Mouth.—It is of the greatest importance to keep the mouth and gums in a healthy condition, and free as far as possible from sources of infection. This is accomplished by the employment of a suitable mouth-wash and tooth-paste. The teeth must be brushed after every meal; it is important, in order to avoid lacerating the gums, that a small tooth-brush of badger's hair be employed.

The best tooth-pastes for use during any form of mercurial administration are those consisting of potassium chlorate in a soapy base. For mouth-wash Freshwater orders either hydrogen peroxide 5 vols. or prescribes a lotion containing liq. aluminii aceto-tart. P. G. suitably flavored. The latter is especially to be recommended where an antiseptic and very astringent action is required. The mouth and gums must be thoroughly rinsed with the lotion once every hour; a small flask holding

enough for the day's use may be carried in the pocket. If these conditions be observed the teeth and mouth usually remain in a satisfactory state.

- 4. Bowels.—In order to quickly eliminate the mercury excreted into the gut, care must be taken that the bowels are opened every day; any tendency to constipation should be corrected by the occasional use of a saline purge, such as Carlsbad salts. Mercurial diarrhea may be easily set up if these conditions are not observed.
- 5. Diet.—A liberal diet should be employed, care being taken to avoid articles which have a tendency to produce looseness of the bowels, indigestion, or fermentative changes, such as nuts, salads, pickles, green vegetables with hard stalks, highly seasoned foods, coffee, sweet puddings, or sweet drinks.
- 6. Smoking.—The use of tobacco is forbidden or reduced to the smallest possible amount per diem. Heavy smokers are liable to set up a gingivitis much more easily than the light smoker.
- 7. Alcohol is best avoided, but in those patients with a tendency to loose motions, claret with meals may be allowed.
- 8. Urine.—Previously to beginning the course the urine should be examined for the presence of albumin or casts. If either be present the greatest care should be exer-In such cases, as a guide to the amount of mercury excreted it is advisable to collect the total amount of urine passed in the twenty-four hours and to submit this to a quantitative test; the normal daily output of mercury as a rule should amount to 0.004 per 1000 Cc. In pronounced cases of chronic nephritis, inunction is contraindicated, but cases of syphilitic nephritis are often markedly benefited.
- 9. General Conditions of Living.—Plenty of fresh air and exercise are very important, but excess and overfatigue are to be avoided. Patients are very liable to contract a chill when under the effects of mercury, and this is often the forerunner of an attack of mercurial diarrhea. The general health should be maintained in as good condition as possible; injections of arsenic

are often beneficial and may be given concurrently with the inunction course.

Complications and Their Treatment.—Folliculitis often occurs and is due to pulling on the hairs during the rubbing, leading to irritation in the hair follicles, which subsequently become infected with pus organisms. It is a very troublesome and irritable condition, and until its disappearance frequently renders further inunction of the part impossible. Before continuing the course the condition should be allowed to clear up under a starch and zinc oxide powder or ointment.

Gingivitis is always liable to occur during the administration of mercury by whatever method it may be given. The first sign is seen usually in the region behind the wisdom teeth, and around the central incisors, the mucous membrane appearing dark-red in color, the teeth feeling somewhat longer than normal, due to a commencing periostitis at the root; they rarely become loose unless the condition is left untreated. A little care on the part of the physician will prevent this disagreeable mishap.

Pathologically a gingivitis begins as a superficial necrosis of the epithelium of the mucous membrane of the gum at the free edge of the tooth, caused by a deposit of minute particles of mercury in this situation; a pyogenic infection takes place, which is greatly assisted by an unhealthy condition of the gums from decayed teeth, the presence of tartar, or neglect of the patient.

The treatment of gingivitis is simple, unless a very severe ulceration, etc., is set up due to idiosyncrasy or neglect of the patient. It is generally enough to paint the gums daily, or less often as the case demands, with a 10-per-cent solution of acid chromic or silver nitrate; personally Freshwater always uses the acid. The gums should be dried with cotton-wool, and only the affected parts touched with a probe on which is wound a small piece of wool soaked with the acid. In severer cases, or where the patient cannot attend so often, he uses the acid up to 50 or 75 per cent, care being taken to rinse the mouth thoroughly

Smoking is, of course, forbidden. In very bad cases due to neglect or idiosyncrasy the administration of the mercury must be immediately suspended. A bath should be taken to wash off all the mercurial ointment, the gums should be painted daily and the mouth-wash used more frequently - i.e., every half-hour - and the underclothes should be changed. When the inflammation has subsided, the inunctions may be begun again with a smaller dose. such as 2 grammes (3ss). Often these patients gradually acquire a tolerance of the drug.

Diarrhea when it occurs is sudden in its onset, severe, and associated with much wind and blood-stained stools. The treatment consists in giving at once 25 drops tr. opii, repeated in three hours if necessary. The patient should immediately take a bath and change the underclothes. A rest from inunctions is necessary for a few days; later they can be continued again, but with a smaller dose to commence with.

This is then the routine as it should be performed, and is of a vastly different character from that usually carried out.

There is no question as to the value of inunction in suitable cases, especially in nerve cases and parasyphilitic conditions, such as tabes. The benefit to the tabetic is, at times, almost marvelous.

Freshwater regards it as somewhat of a mystery why the medical profession has not taken example from Aix-la-Chapelle with regard to this form of treatment, especially as England sends the largest number of patients a year to Aix-la-Chapelle, to return after a stay of a few weeks much improved.

In his opinion, inunction is not suitable as routine treatment of syphilis, although this method is practiced extensively throughout Germany. It is a very dirty and troublesome method, and takes up a lot of time during the day; it is most suited for severe cases, or when the patient has not to get about his daily business. It is also unsuitable for cases with profuse eruptions or ulceration or where much scarring is present. It must also be noted that some skins show a marked intolerance to mercury, a

profuse dermatitis being easily set up; this is, however, of very rare occurrence.

For ordinary cases and as a routine treatment he much prefers the employment of intramuscular injections of mercury, which have the advantage of an exact dosage, painlessness, and relative cheapness. It must, however, be understood that the same attention to detail obtains in the case of the teeth, gums, diet, etc., with the injection treatment as with the inunction.

#### THE PRESENT POSITION OF SAL-VARSAN.

An anonymous writer in the Lancet of April 6, 1912, writes incisively on this subject. He says that in spite of the eminence of the introducer of the salvarsan treatment of syphilis, the solid scientific basis on which it appeared to rest, and its marvelously rapid effects, like all vaunted remedies (one might say proprietary remedies) this drug has failed to maintain its claims. Where is the sterilisatio magna which we were told could be accomplished by a single dose? The advocates of the treatment now resort to several doses and still are not able to prevent relapses. So great is their confidence in the treatment that they recommend it be followed by the disparaged mercurial course!

Turning to the question of safety, the position is equally unsatisfactory. Deaths following its administration are now constantly recorded, and reports come from all over the world that many are never recorded. The earlier deaths were attributed by Ehrlich to the use of the drug in unsuitable cases, when contraindications which he has laid down, such as organic disease of the nervous or cardiovascular system, were present. Admitting this explanation, for the sake of argument, it is only one proof of the dangers of the drug. several of the recorded cases the patient showed no signs of the lesion found after death and held responsible. Thus in the case reported by Professor Oltramare, of Geneva, a robust man who had contracted syphilis fifteen years before, desired an injection of salvarsan, although he was free from symptoms. A complete examination revealed no signs of disease. He was given a single intravenous injection of 60 centigrammes, which was well borne. On the third day he complained of headache, and on the fourth day died comatose after several attacks of convulsions. Two of the supporters of the salvarsan treatment ask why not throw some of the blame on the leptomeningitis, chronic bronchitis, and bronchopneumonia which were found postmortem. Excepting the bronchitis, the evidence is that these lesions were due to the In any case the argument is irrelevant as regards safety, for the man was on examination found not only healthy but robust.

Several other cases have been recorded in the columns of the Lancet in which ordinary doses of salvarsan proved fatal to young robust patients. We are unfortunately familiar with the symptom-complex of coma, epileptiform convulsions, and death-termed by Sicard meningotropismas a result of the injection of salvarsan, and it corresponds exactly to the nervous form of acute arsenical poisoning. Indeed, Mr. Foerster (an advocate of salvarsan, by the way) says that it is "inexplicable except as acute arsenical poisoning." It is curious that it most frequently has been observed after a second dose.

At a meeting of the Société Médical des Hôpitaux of Paris on November 17 last M. Paul Ravaut discussed a series of eight such fatalities, one of which occurred in his In all a young robust patient own hands. without visceral disease was given an ordinary dose of salvarsan which was well After a varying interval a second dose was given, and was followed by vomiting, pyrexia, epileptiform convulsions, coma, and death. The necropsy showed congestion of the brain and other organs, and sometimes small hemorrhages into In three other and non-fatal cases an erythematous eruption appeared after the second injection. The advocates of salvarsan attribute them to cumulation. M. Ravaut was compelled to reject this explanation, for in some of the cases the doses were small and the interval between them was many days. Thus, in one fatal case two doses of only 40 centigrammes were given at an interval of forty days. As to the theory of Wechselmann that such symptoms are due to microbes in the distilled water used for dissolving the salvarsan, M. Ravaut points out that he always uses filtered water, sterilized at 120° C. Moreover, in two of the cases the same solution was used for other patients who manifested no symptoms. The only conclusion is that the ill results were due to some idiosyncrasy. Possibly the first injection causes some modification, which leads to decomposition of the second dose. It is not generally realized that an ordinary dose (60 centigrammes) of salvarsan contains such a large quantity of arsenic as 3 grains. It is true that, as in the cacodylates and other organic compounds of arsenic, quantities of arsenic otherwise polsonous can be given in salvarsan usually with impunity, but we have no guarantee that such compounds may not sometimes decompose in the body, setting free a toxic amount of On the contrary, we now have arsenic. evidence that this does occur.

In addition to the form of arsenical poisoning just described, commoner and characteristic toxic effects have been observed—acute fatal nephritis, fatal jaundice, herpes zoster, erythema, melanosis, conjunctivitis, vomiting, diarrhea, and muscular cramps.

In the paper referred to above, suggesting that the toxic symptoms following the administration of salvarsan are due to microbes in the distilled water, the writers have produced evidence only that the immediate and temporary symptoms following the injections—rigors, rise of temperature, and malaise—are due to this cause. They have produced no evidence that symptoms of arsenical poisoning can be so produced. In the extensive use of saline injections in surgery, without the elaborate precautions now enjoined to keep the solution microbefree, has any one observed arsenical poisoning, or, excepting cases in which enormous

quantities have been administered, any serious effects whatever? Finally, take the theory that the toxic symptoms are due to endotoxins set free in the destruction of the spirochætæ. If true, this would only be another admission of the dangerousness of the drug, for who can gauge the amount of endotoxin that will be set free? But, as Professor Finger has shown, similar symptoms follow the use of the drug in psoriasis and leprosy.

One gets impatient of these ever-changing "explanations" which do not explain, and are only attempts to square the facts with the erroneous teaching that salvarsan is innocuous when given according to rule. They are an insult to the intelligence. In the routine treatment of syphilis salvarsan has shown no advantage over mercury, except rapidity of action; that in permanency it is less reliable; and, therefore, that it is unjustifiable to expose patients to its undoubted risks. It may have a place in exceptional cases which do not yield to mercury.

### THE TREATMENT OF PLACENTA PREVIA.

In an article in the *Practitioner* for June, 1912. Shaw reaches these conclusions:

The best method of treatment for both mother and child is, where possible, to leave nature alone, but the doctor must be in attendance until the case is over, as severe hemorrhage may occur at any time. If the hemorrhage is severe, manual dilatation of the cervix and extraction of the child give the best results, but this operation should only be carried out by an experienced obstetrician.

Internal podalic version gives excellent results to the mothers, though very bad to the children. This should always be done if the hemorrhage is severe and the practitioner not sufficiently experienced to perform full dilatation and extraction. The mother's life is always much more valuable than the child's.

Champetier de Ribes's bag, packing the vagina or cervix, and Cæsarian section are not recommended.

With treatment carried out on these lines, very few mothers will be lost; many of the children will be still-born, but the mother must always be the first consideration, and any treatment which increases her risk for the benefit of the child is quite unjustifiable.

#### THE PATHS OF RHEUMATIC INFEC-TION IN CHILDREN AND THEIR PROTECTION.

MACKENZIE in the British Medical Journal of June 1, 1912, discusses this important theme under several heads.

The importance of protection from local and general infection cannot be exaggerated, and the time has come when the mind of the profession, and more particularly the general practitioner, must turn to the possibility not only of treating rheumatic phenomena in children early, but of preventing their occurrence.

Hypertrophied adenoid tissue in the throat and nasopharynx should be removed in the quiescent stage, and simple congestion of the pharynx, palate, and fauces in a child with a rheumatic family or previous history, or with a rheumatic facies, should always be looked upon seriously, and met with local applications of salicylic acid preparations, together with sodium bicarbonate, sodium salicylate, potassium chlorate, and aperients. A 5- to 10-per-cent of sodium salicylate applied to the tonsils, palate, and pharynx gives a protective film from further contamination, and does not. impair the defensive action of the tissues: or a gargle containing 20 to 40 grains to the ounce is equally efficacious. Care should be taken that decayed teeth are stopped or extracted, and the tooth-brush and antiseptic powder should be insisted upon daily.

Inhalation for half an hour, three times a day, of 10 minims of a solution of equal parts of creosote and carbolic acid with a Burney Yeo inhaler is, Mackenzie believes, the best method of protecting the pulmonary mucous membrane.

His experience is that sodium salicylate combined with sodium bicarbonate and rhubarb powder is by far the best protective treatment in cases in which there is any indication of excess of mucus in the intestine, the alkali acting as a solvent, the rhubarb clearing the offending material away, and the salicylate acting as a sedative and healing agent to the mucous membrane.

His conclusions are as follows:

- 1. The micrococcus rheumaticus takes the path of least resistance.
- 2. This may be an unhealthy throat, absorption from which frequently gives rise to general rheumatic infection, including peritonitis and appendicitis, directly through the vascular system.
- 3. Or it may be localized in the bronchial tubes and give rise to pneumonia, with polyarthritis and endocarditis.
- 4. An unhealthy condition of the intestinal wall may excite to activity the rheumatic agent, setting up acute rheumatic phenomena with peritonitis or appendicitis as part of a general infection.
- 5. A mild catarrh is produced at the seat of inoculation, and one or more of three factors in each case are present and promote the inroads of the micrococcus. Either (a) the physical resistance, or (b) the protective properties of the local tissue, or (c) defensive agencies of the blood, are below par.
- 6. The distinction between acute and subacute or latent rheumatism is mainly due to general infection with the actual rheumatic agent in the former and with the toxins only in the latter.

#### ASPIDOSPERMIN.

COHEN, writing in the Review of Reviews for June, 1912, starts out by saying that the title at the head of this article is probably unfamiliar to many of our readers. Yet it is that of a drug whose potency in well-selected cases is so great that competent authority has termed it "the digitalis of the lungs." From twenty years' use—or more—Cohen can affirm that it is a sovereign palliative (not curative) for the symptom dyspnea, when this is not dependent upon mechanical or toxic causes; and it is sometimes a valuable aid in the partial

relief even of these latter forms of distress in breathing. Its great field, however, is in asthma, and while occasionally one meets a case it will not help, such cases are rare. The drug is not official, but ought to be. has been comparatively little investigated, but such investigations as there are have been made by big men. The most recent laboratory study that he is familiar with, that of H. C. Wood, Jr., dating some five vears back, confirms all that has been affirmed clinically. Wood, who was led to his studies by clinical results observed in Cohen's hospital practice, found that aspidosperma quebracho contains several alkaloids, possessing similar, and nearly equal, powers as pure respiratory stimulants. principal ones are aspidospermin and quebrachin.

Commercially one may obtain aspidospermin in many more or less pure or impure forms; and some disappointments in its use may doubtless be ascribed to inferiority in the preparation. So-called "amorphous aspidospermin" is comparatively inexpensive: but it is an uncertain mixture of uncertain residues left after the crystallization of the less impure alkaloid or its salt. The most expensive preparation-crystalline aspidospermin hydrochloride—is, after all, the cheapest, for it is the most dependable. Whether quebrachin in pure form would be equally potent and trustworthy cannot be said, as it is not easy to obtain for clinical work. The Pharmacopæia should presently prescribe a standard for the pure alkaloid aspidospermin and its salts, after which the other principles of quebracho may be studied to determine the question of relative superiority or availability.

The dose in asthma is from 1/10 to ½ grain (0.005 to 0.03 gramme) every hour or two; then less frequently as relief is manifested. An "average dose"—if there be such a thing—is ½ grain hourly. Physicians unfamiliar with the drug should prescribe small doses and proceed cautiously. Should there be no relief in forty-eight hours, the patient will not be benefited by longer trial. Cohen states that aspidosper-

min is not "curative," either of the paroxysm or of the underlying "diathesis" or pathological condition (e.g., vasomotor ataxia or chronic bronchitis), which must, in addition, receive treatment secundum artem; but as a palliative, tending to prevent recurrence of "spells" in the night, as well as to relieve constant distress, it is a most valuable adjunct to any basic plan of management.

#### BACILLURIA.

CAMPBELL WILLIAMS in the Clinical Journal of May 29, 1912, states that the treatment of a case of bacilluric cystitis must be suited to the degree of the inflammation present. In the acute cases it is not advisable to resort to local measures until the exalted symptoms show signs of subsiding. Rest in bed, hot hip-baths, and india-rubber hot-water bottles can be advocated with a knowledge that such will give relief. The tenesmus, and to a degree the vesical spasm, may be moderated by the use of morphine and belladonna suppositories. A urine-bottle kept in the bed saves the patient the ever-recurring necessity of getting out to pass water. Plenty of bland fluid should be given to the sufferer to drink. To that end Williams gives alchimella tea. It is made as follows: Put one once of the leaves of Alchimella arvensis into a pint teapot. Fill with boiling water. Let stand an hour; cool, strain, decant. Add milk and sugar according to liking. Take one-third portion morning, noon, and evening. It acts like buchu, but does not upset the stomach in a similar manner. Medicinally the following mixture is useful: Helmitol, gr. v; potas. citratis, gr. xx; tinct. hyoscyami, mins. xv; ext. tritici repens liq., 3ij; syr. aurant., mins. xxx; aq. carni ad 3j. To be taken every sixth hour.

Williams prefers helmitol, which is said to be anhydromethylene citrate of hexamethylene-tetramine, in preference to urotropin or hexamethylene-tetramine. It seems to be more efficacious; and he has used boracic acid in large doses with advantage. But some people's digestion will not stand it. He has given it in 20-grain doses up to three consecutive doses in a single day, and then in 10-grain doses three times in the succeeding day. Camphoric acid gr. x in cachet t. i. d. has been advocated. Salol, phenyl salicylate, gr. v ter in die, is useful, particularly to ring the changes with helmitol should it seem to lose its effect. The main object, however, is to endeavor to make the urine alkaline. or at any rate to reduce its acidity. For it is asserted that if one could keep the urine alkaline the colon bacillus would become sterile and die out, as it is believed to need an acid medium for its existence and multiplication. As so many of these germs are unfavorably influenced by light, it has been suggested that local irrigation of the bladder with radioactive water might be beneficial as well as the oral consumption of the

As soon as matters have quieted down and the case has entered into the subacute stage, one may then venture upon the topical treatment of the bladder. At the commencement Williams starts with either boric acid lotion 4 per cent, made with dilute saline solution, which irritates less than ordinary distilled water, or else lotio potas. permang. (gr. 1/8 ad 3j). If the neck of the bladder and the urethra is cocained before washing out it gives relief to the patient. A few drops instilled within the bladder are highly sedative. Personally Williams prefers a 4-ounce india-rubber bladder bottle for washing out, using small quantities at each squeeze, and making certain by examining the returning fluid in a glass that it is clear from shreds, etc., before considering that he has cleansed the bladder. Of course one cannot see them with potassium permanganate. The bladder should be washed out at least night and morning. After the evening wash-out he throws in a couple of drachms of the following iodoform emulsion, which was concocted for him by Dr. W. H. Martindale. Many patients will not tolerate even Berkelev Hill's iodoform emulsion or others with glycerin or mucilage of tragacanth.

They irritate and produce strangury, and are consequently not retained. He has not found that Martindale's preparation irritates. It is as follows: Iodoform, gr. xx; pulv. tragacanth, gr. iv; alcohol, min. j; normal saline solution, min. cccc.

Throw two drachms into the bladder and allow it to remain there. A little is passed at each micturition. It certainly seems to clear up the urine rapidly, judging from the decrease in sediment and alteration in the appearance of the urine after even one injection. It is well to remember, at least in the later stages of treatment, when nitrate of silver is employed, that one must not use iodoform and silver nitrate at the same time as they form an explosive compound.

In treating the chronic type of bacilluric cystitis one can still use the mixture of helmitol, etc., and in addition give a capsule of sandalwood oil with benefit to the patient. In this variety of the affection one can wash out the bladder, first, with peroxide of hydrogen 5 or 10 volumes in strength. If the urethra is cocained it does not sting. Williams usually throws in 10 ounces as one injection, keeping the catheter in situ to liberate any gas should it be evolved in distressing amount. He keeps the peroxide solution in for three to five minutes, lets it out, next washes out thoroughly with boric acid, and then instills some iodoform emulsion. In other cases one can use potassium permanganate solution, gr. j to ij to the ounce, irrigating the bladder with it. The last stage in the local treatment is to wash out with a solution of nitrate of silver. Williams throws in about 4 ounces at a time and endeavors to have it retained for five minutes or so. Then he waits three days, and if no marked reaction has followed its use he repeats the procedure. Of course one has to be guided by the behavior of the bladder and one's own experience as to when and how often it is necessary to repeat the injection. Williams asserts that to cure a bacilluric cystitis it is wise to wash out the bladder oneself and not trust the patient to do it. When the infection has passed beyond the bladder to the ureter and kidney, the treatment resolves itself into vaccinal and medicinal.

Lastly, should the bacilluric cystitis be complicated with vesical calculus, he would always advise suprapubic cystotomy in preference to lithortrity, for one is then able to rest the bladder by drainage, and the thorough irrigation of its cavity is an easy and painless operation. He asserts he has seen considerable and rapid benefit ensue from continuous urethral drainage of bladders infested with the colon bacillus when this is combined with efficient irrigation. But it necessitates that the patient should be confined to bed—a procedure which the average chronic cystitic sufferer objects to.

### THE TREATMENT OF DIPHTHERIA BACILLI CARRIERS.

Writing in the Journal of the Michigan State Medical Society for June, 1912, Holm asserts that the discovery of a healthy diphtheria bacilli carrier at a time when there is little or no diphtheria in the community is not regarded by epidemiologists as being of much importance. The patient should be instructed in the prophylaxis of diphtheria and efforts should be made to hasten the disappearance of the bacilli, but isolation or quarantine measures would hardly be indicated and would be impracticable.

At times when diphtheria is prevalent, however, infected contacts and convalescent carriers are of greater importance. At such times it is evident that conditions favoring the spread of diphtheria are present, and healthy carriers are at least as important in controlling the infection as those sick with the disease.

Since the discovery was first made that diphtheria bacilli remain in the throat after the clinical lesions have disappeared, efforts have been directed toward hastening their departure by various methods. Many practitioners still seem to believe that the bacilli are affected by injections of antitoxin, and it is largely for the purpose of dispelling this erroneous idea that this pa-

per has been written. Antitoxin not only does not affect the diphtheria bacilli themselves, but the injection of frequent doses of antitoxin at intervals extending over prolonged periods may so sensitize the patient to horse serum as to be positively dangerous. Numerous antiseptics have been recommended for use in various forms as sprays, gargles, inhalations, and as direct applications to the lesions. Such antiseptic treatment is of benefit in limiting the power of infecting others by its action on the superficial bacilli, but experienced observers have concluded that the period in which the patient remains a carrier is not materially shortened, and it appears that in some cases at least the period has unquestionably been prolonged. Injections of diphtheria bacilli bacterins and local applications of serum from horses injected with living or dead diphtheria bacilli have been tried with some apparent success; but none of these methods have come into general

Special attention should be given to unhealthy tonsils, adenoids, or nasal growths. Such tissue may at times harbor diphtheria bacilli for prolonged periods. Pegler (1905) reported that he "had several times found that the cause of the lingering presence of diphtheria bacilli could be removed by carefully extirpating every trace of unhealthy tonsil tissue, in which crypts he had found adenoid or nasopharyngeal tonsillar tissue to be the offending cause of the trouble."

It has occasionally been noticed that, following inflammatory lesions due to some other agent than the diphtheria bacilli, these organisms have disappeared from the throat. This brings to our attention the well-known principles of antibiosis, which have been applied in the treatment of several other bacterial conditions. It has been recommended that the mouth be sprayed with suspensions of staphylococci in pure culture, and favorable results have been reported from this procedure. The method undoubtedly is worthy of further trial. They have tried to make cultures of mixed bacteria from a normal mouth to be used in the same way. Good results have been reported from the use of such cultures; but their idea, which was to spray with a culture representing the normal bacterial flora of the mouth, has been abandoned because there appears to be no artificial culture medium which will grow more than a small proportion of the various bacterial species found in the normal mouth.

Apparently there is within certain limits what might be termed a normal bacterial flora for the mouth. These various bacterial species growing symbiotically and maintaining a saprophytic existence undoubtedly afford a certain amount of antagonism against the invasion of foreign organisms. When a diphtheria infection occurs the normal flora is destroyed either. wholly or in part during the acute stages of the disease. After recovery the normal flora is gradually reëstablished and the diphtheria bacilli disappear. If through vigorous use of antiseptics the restoration of the normal mouth bacteria is retarded. typical morphologic forms of diphtheria bacilli may persist for long periods. Thus in several instances the swabs from recovered patients have given nearly pure cultures of bacillus diphtheriæ for months after the throats had apparently become normal. In these cases when antiseptics were discontinued and the throats inoculated from a normal mouth, the normal flora has been reëstablished and diphtheria bacilli have promptly disappeared. The method employed is to inoculate a sterile swab from a normal mouth and rub it over the mucous membrane of the mouth and pharynx of the carrier. No mouth-wash should be used for at least six hours after such treatment, and after that time the mouth-washes used should not be antiseptic. On the second day a swab should be taken for culture and examination. If possible, the process should be repeated.

Holm's experience with this method has been very favorable, and it appears to be well worthy of further trial. The chief objection to its use is the danger of transferring other infections, and this should be carefully guarded against. When cultured bacterial suspensions are used, this danger is obviated, and if practical experience should indicate that equally good results may be obtained by use of cultures, the advantage is worthy of consideration.

### PRACTICAL POINTS IN SEBORRHEA LICHENOIDES AND PRURITUS.

The Australian Medical Journal of May 4, 1912, contains an article by Noyes. He says the subjective symptoms usually met with in disordered conditions of the skin are itching, burning, tingling, formication, tenderness, and pain. The most troublesome of them is itching. The term pruritus, about which there is some confusion, ought to be applied to those forms of itching which are not preceded by any obvious skin lesion. "It is a true sensory neurosis due to some functional disorder of the related nerves independent of any source of irritation on the surface."

Itching may be the result of external causes, as the acarus scabei or pediculus corporis, or it may be the subjective symptom of eczema, lichen planus, psoriasis, etc.; or, again, it may be produced by internal derangements of the kidneys, liver, stomach, and uterus, by glycosuria, and by lithemic conditions generally. It may be localized or generalized. If localized, apart from the situations determined by definite local causes as eczema, the most common positions attacked are the anus, the scrotum, and the vulva.

The anus, so often attacked, is in the adult nearly always associated, as pointed out by Crocker, with hepatic derangements, and the local causes, such as constipation and hemorrhoids, which appear to be the direct cause, are dependent upon hepatic disturbance.

The scrotum when involved very frequently has a definite local cause in a modified eczema.

The vulva in the adult is frequently affected, and very often as the result of genito-urinary trouble from the ovaries, uterus, vagina, or urethra, sometimes occurring obstinately at the climacteric period and occasionally during pregnancy.

With regard to this pruritus of pregnancy, it may be confined to the genital regions, or it may affect areas at a distance, or may even be more or less generalized. Noves has observed a few cases of this in which the child, when born, developed a neurosis -urticaria papulosa-with itching as its pronounced tormenting symptom. In all cases of itching in the neighborhood of the genitals, unless some other cause is quite obvious, it is advisable to examine the urine for sugar. Noves asserts he has seen it so mild as to produce a slight sense of itching about the urethral orifice with a scarcely discernible dermatitis, but, again, so severe as to become almost intolerable. with an accompanying dermatitis extending from the knees to the umbilicus. In these localized forms about the genitals the inflammatory condition of the skin is an important factor in the production of the itching, though in glycosuric subjects the skin may itch far removed from the genitals and without any accompanying dermatitis.

Urticaria produces very marked itching, but it must not be forgotten that itching, or rather the rubbing and scratching for the relief of it, not infrequently itself produces urticaria.

Occasionally pruritus may exist only in the imagination. Noves has recently had two cases in young adults in whom every conceivable cause was excluded, and in one of whom-a nurse-maid-he is convinced it was a hysterical manifestation, though this mental condition may proceed still further and end in complete aberration. A man under his care at the Melbourne Hospital some years ago ultimately committed suicide, not because the pruritus was intolerable, but because he developed a mental condition not far removed from insanity. of which the imaginary pruritus was one of the earliest symptoms. Crocker, excluding such cases as urticaria pediculosis and scabies, places the causes referred to above in the following order of frequency in the production of general pruritus: Hepatic derangements "as seen in the lithemia of Murchison," jaundice, etc., disorders of the alimentary canal, kidneys, and diabetes mellitus, disorders of the uterus, ovaries, and pregnancy.

Keeping in mind what has been said regarding the cause of this nerve-racking symptom, it goes without saying that before complete relief can be expected from treatment the cause must be ascertained. and this often can only be worked out in a systematic way, excluding one cause after another, whether of external or internal origin. Cases occasionally baffle the most experienced, and in such where the primary cause cannot be ascertained the following have been suggested as likely to give some relief: Tincture of gelsemium in rapidly repeated doses, tincture of cannabis indica in increasing doses, well diluted; phenacetine and phenazone, bromides and chloral sometimes give relief.

Whilst pursuing this course local remedies must be used to help alleviate the patient or to relieve the affected area it is the seat of an inflammatory process from the deleterious effects of rubbing and scratching, which determines more blood to the inflamed part, keeping up the process interminably. External remedies may be chosen from terebene, lysol, liquor picis carbonis, benzoic acid, carbolic acid, which are best given in lotion form if a large area is involved. Menthol is useful as an ointment for limited areas or as a soap, which may be lathered over the whole surface if the condition is generalized.

In choosing remedies for pruritus ani, note the local condition—hemorrhoids, constipation, etc.—that may be present, and recognize their definite association and the definite association of pruritus ani generally with hepatic disturbance, and treat accordingly.

Locally, mercurial preparations in ointment form, perhaps combined with one of the external remedies mentioned above, are useful.

Cocaine as a 5-per-cent solution on a narrow strip of lint inserted into the anal orifice often gives marked temporary relief.

It is necessary to remember that many of the "so-called cases of pruritus scroti are really due to an underlying eczematous process which must not be fanned into flame."

. Crocker suggests painting on argentic nitrate gr. 10 to spiritus ætheris nitrosi oz. 1, or ung. hydrarg. ammoniati 10 or 20 grains to the ounce, or liquor potassæ drachms 2, acidi carbolici drachms 4, ol. lini. q. s. ad oz. 2, ol. bergamot m. 10 (Bronson's oil).

Keeping in mind all the causes referred to when previously speaking of pruritus vulvæ, it may be possible to cure it without local remedies, though they occasionally give much relief.

The author recommends lead lotion 15 to 20 minims to the ounce; nitrate of silver 5 to 10 grains to the ounce of nitrous ether; a saturated solution of boric acid; but he gives the palm to the plan, recommended by Reeves, of applying every night with a camel's-hair brush the compound tincture of benzoin.

#### ANTITYPHOID INOCULATION.

In the Glasgow Medical Journal for June, 1912, LEISHMAN tells us that as to the use of typhoid vaccine in the treatment of actual cases of enteric fever there is difference of opinion. In some quarters feeling is strongly against it, as it does not, on the surface, seem rational to inoculate a case with more of the germs which are causing the disease. Yet Leishman believes there is good scientific foundation for such treatment, and he has had some first-hand, and a good deal of secondhand, experience with it, amounting to some forty or fifty cases. The conclusion he has reached is that inoculation of cases of enteric fever with typhoid vaccine is a most valuable means of treatment, and that the vaccine therapy of these general infections will in time prove of great use. His experience in treatment was that small doses did no harm, but at the same time did no good. The dose was then increased from 50 to 100 millions every third day, with which excellent results have been obtained. The number of cases so treated is too small to base general conclusions on, but all who had to do with the patients thought they had benefited greatly. The enteric facies disappeared, the patients said they felt better, and in two or three cases they even asked that the vaccine should be repeated! Also, it seems to reduce the size of the spleen and to increase the flow of urine, which is thought to be a favorable sign. Shortening of the fever is difficult to judge.

As to the temperature, the result of vaccination is to raise the temperature in the following twenty-four hours about 1° F. over what might have been expected, but it soon falls, and to a lower point than before inoculation. About the third day after inoculation it tends to rise again; another injection is given, and the same result follows. And, finally, the temperature touches normal, and remains there.

There has been, in cases treated with the vaccine, a very notable absence of severe complications and of tendency to relapse. He says the method is now being used frequently in the United States. As to the relative advantages of using a stock vaccine or an autogenous vaccine. Leishman thinks that stock vaccine gives better results. As to dosage, very small doses appear inefficient, and, as far as our present knowledge goes, he would recommend starting at a dose of 50 millions, cautiously increasing it to 100 or 150 millions. In his opinion the vaccine treatment of enteric fever is sound practice, and will grow in favor as time goes on.

### SO-CALLED DELAYED CHLOROFORM POISONING.

CORNER in the *Clinical Journal* of May 29, 1912, discusses this topic.

A point which he noticed was that the illness of "delayed chloroform poisoning" was more frequent between three and eight years of age than either before or after that age. Subcutaneous injections of atropine were used before anesthesia to prevent the formation of mucus in the mouth and the subsequent absorption of the drug swallowed, and had no influence in preventing the symptoms of delayed chloro-

form poisoning. It is possible that the anesthetic in part is excreted into the alimentary canal and reabsorbed from it. Therefore it makes but little difference if the drug is absorbed from the lungs or swallowed.

It is clear that a large proportion of children develop acetonuria merely as the result of the altered condition which admission into hospital entails. The real causation is uncertain, but there is reason to believe that the change in the diet or the refusal to take food, which so often follows their admission, are the chief factors. And further, it must be noted that the addition of glucose to the ordinary diet made little difference to the incidence of the acetonuria. The administration of an anesthetic caused the appearance of acetone in the urine in the majority of cases—72 per cent in the wards and practically 100 per cent of the cases in the out-patient department. Here, again, the previous administration of glucose made no great difference to the incidence of the symptoms. Only a few who developed acetonuria after the operation showed any other symptoms. Further, no patient who had already had acetone in the urine before the anesthetic was administered showed any recognizable sign of increased intoxication.

The problem of the occurrence of delayed chloroform poisoning is a very difficult one, and so long as it is necessary to produce anesthesia by the administration of a poisonous drug such as chloroform, so long will cases of delayed chloroform poisoning occur. In other words, if we have to administer chloroform 100 times, we are absolutely bound amongst those 100 cases to have a case (fatal or non-fatal) of delayed chloroform poisoning. There is one very useful item which Corner believes he should not omit. For some time in his ward at the Hospital for Sick Children they have been giving these children, before the anesthetic, injections of morphine and atropine, and that has been found to be very successful. The children have an injection of morphine and atropine about three-quarters of an hour before operation

and require much less anesthetic. To make this more practical Corner mentions the doses: The morphine injection of the pharmacopæia of this hospital is of the strength of 1 grain to 40 minims—that is, about half the strength of the solution of the British Pharmacopæia. And they give it in the proportion of 1 minim to a child of one year, 2 minims to a child two years of age, and so on. The atropine injection of this hospital is of the strength of one grain to 400 minims—that is to say, onequarter the strength of the corresponding solution in the British Pharmacopœia. The usual doses are as follows: if the child is over five years of age, 4 minims; four to five years, 3 minims; three to four years, 2 minims. Up to three years old they give 1 to 2 minims. In this connection it is of interest to note that children seem to bear this drug with great tolerance, because to a child five years old we administer 1/100 grain, which is the full dose for the adult recommended by the British Pharmacopæia. A child of five takes that dose excellently.

In conclusion it will be understood that the occurrence of this condition called delayed chloroform poisoning is a necessary result from the administration of a poisonous drug to produce anesthesia. We cannot escape the occasional occurrence of the condition of "delayed chloroform poisoning" so long as we continue to administer such a drug to produce anesthesia, and the only power we have is to minimize the frequency of its occurrence. In the preparation of the patient the normal habit of life should be changed as little as possible, and one should particularly avoid purgation and those periods of abstinence from food (or starvation) which commonly form a part of the rule of preparing for an anesthetic. As small a quantity of the anesthetic should be administered as possible. and after it has been administered every opportunity should be given for the excretion of the drug which has been absorbed. The activity of the bowels should be maintained and stimulated, sickness should be rather encouraged than checked, the skin

should be made to act, and by diuretics the elimination of the poison through the kidneys should be induced and encouraged.

### THE TREATMENT OF SCARLET FEVER WITH SALVARSAN.

In the Therapie der Gegenwart, May 12, 1912, KLEMPERER and WOITA record their experiences in the treatment of scarlet fever with salvarsan. They state that during the past seventeen months they have treated 109 cases of this disease, which did not come from one district alone but from many districts, and therefore probably suffered from numerous types of in-Forty-nine of these cases were not treated with salvarsan: seven had otitis. 21 nephritis, and eight endocarditis. Many of the patients were exceedingly ill, and when a colleague sickened and died in four days, apparently from pure toxemia, they decided to make a trial of salvarsan, because they think it has been shown that in scarlet fever a positive Wassermann reaction is obtainable in a certain proportion of cases. In the last twelve months they have treated 60 cases of scarlet fever, of which 21 were too mild to require drug treatment, and 39 which were severe were treated with salvarsan. Of this number five died, one of the cases being an instance of puerperal scarlet fever following a septic abortion, her death being due to sepsis. One of the fatal cases occurred in a twoyear-old child who had whooping-cough and who died of bronchopneumonia. Two other cases when admitted suffered from severe diphtheric and streptococcic toxemia. Only one of the five fatal cases was thought to be due to actual scarlatinal infection.

This number of cases is not sufficient to justify definite conclusions regarding the value of salvarsan, but the authors are under the impression that it is distinctly useful. Its injection resulted in a marked fall of temperature and in aborting the full development of the rash, or at least greatly delaying it. On the other hand, in some cases, the sore throat became worse

and the enlargement of the cervical lymph nodes was noticeably increased. As a rule. however, the sore throat seemed to be controlled. The use of Fowler's solution as a control test showed that its action was not the same as that of salvarsan. The authors noticed, however, that vomiting and diarrhea set in after the administration of salvarsan in most cases, and at times the diarrhea was very profuse. The dose of salvarsan which they used in scarlet fever was 0.1 gramme in the first year; in the second year 0.2 gramme; in older children 0.3 gramme; and in adults 0.5 gramme. The drug was given almost always intravenously.

Klemperer and Woita conclude, therefore, that salvarsan exercises a favorable action in the course of scarlet fever, although they are unable to determine at this time whether it has a specific effect, or to explain its influence. With the exception of a paper contributed to this subject by Lenzman, in which he claimed good results from salvarsan, no other clinical investigations have been made, so they claim.

## HYPODERMIC INJECTIONS OF IRON AND ARSENIC IN SECONDARY ANEMIA.

JOHN J. MUSSER, JR., in the Boston Medical and Surgical Journal of May 23, 1912, states he has had the opportunity to observe the general condition and to make repeated blood counts in a series of fourteen cases which received, hypodermically, injections of iron and arsenic.

Early in the treatment of anemic patients some of the various Italian preparations of organic salts of iron were imported and used, but the results from their use were not satisfactory. The difficulty and expense of securing these preparations led to the use of a solution of ferric citrate prepared locally. This was used in various doses, but on the whole the results were not such as would indicate a continuation of the treatment. The ferric citrate in doses sufficiently large to give good results was found to be so irritating, and the in-

jection so painful, that the patients for the most part rebelled against the treatment. Also in a few cases there were attacks of vertigo, fainting, and in some cases vomiting after the injection. Then the present formula was secured and so far has given most satisfactory results. The iron is used in conjunction with arsenic and sodium glycerophosphate. The iron and arsenic. of each .06 gm., and the sodium glycerophosphate, .10 gm., are dissolved in 1 Cc. of distilled water. This makes a slightly alkaline, reddish-tinged solution, clear, without sediment. It is placed in small glass ampoules, sterilized, and when sealed is ready for instant use. Each ampoule contains a sufficient quantity for one dose. The few minutes to sterilize the syringe and needle are all the time required to give the injection. It may be given in any muscle, but in the treatment of ambulatory cases the most satisfactory site of injection is directly into the muscles of the thigh or into the deltoid muscle. The solution is so free from irritating qualities that it has not been found necessary to give the injections deep into the gluteal or lumbar muscles. The treatments as a rule were given twice a week, though in some cases as often as daily for a short time. In several cases the injections were only given once a week. With the iron and arsenic, treatment was usually given for the local condition causing the anemia. In some of the cases treatment of the local condition had been carried on for some time without any definite improvement. Upon the addition of the iron and arsenic the results were usually most pronounced. The increase of hemoglobin and erythrocytes brought with it freedom from the troublesome symptoms of before. The amelioration of the symptoms and improvement in the primary trouble usually resulted in the patients discontinuing treatment before it was desirable. In most of the cases the treatment was simply the correction of dietetic and hygienic faults.

Of the fourteen cases treated in this manner, only one failed to respond promptly. This patient, a young married woman,

was found later to be pregnant, and the treatment was discontinued.

The author has had the opportunity of studying the blood in a case of pernicious anemia. Before the treatment began the hemoglobin was 19 and the erythrocytes 950,000 per cubic millimeter. Two months' treatment raised the hemoglobin to 68 and the erythrocytes to 3,490,000 per cubic millimeter.

Musser's conclusions are as follows:

- 1. The intramuscular injection of iron and arsenic in organic compound is entirely practical in office and dispensary work.
- 2. It is a valuable adjuvant to the treatment of anemia secondary to some relatively mild condition.
- 3. It affords a method of giving the drugs in which the exact amount taken is accurately known.
- 4. It does away with the annoying complications frequently resulting from the administration of the drugs by mouth.

### SOME NOTES ON THE DIAGNOSIS AND TREATMENT OF ECLAMPSIA.

Skeel in the Cleveland Medical Journal for May, 1912, writes on this topic and presents the following summary of his views:

- 1. Albuminuria is the most uniformly present symptom of preëclamptic toxemia.
- 2. Its persistence, in spite of treatment, is more significant than its quantity.
- 3. Albuminuria, rise in blood-pressure, and edema are unfortunately "grouped" in their severity.
- 4. The child's interest in induced labor is identical with the mother's.
- 5. Eliminate vigorously before starting labor.
- 6. Whenever under reasonably vigorous treatment the patient does not improve, induce labor.
- 7. In the presence of actual convulsions:
  (a) If the cervix is open apply forceps or do version; (b) if the cervix is closed do vaginal or abdominal Cæsarian section;
  (c) avoid the strain of labor.
  - 8. Gas is the anesthetic of choice for op-

erative procedure, next ether; never chloroform.

- 9. Avoid undue forcing of hot packs for 'fear of heat-stroke.
- 10. Secure time for production of elimination by controlling convulsions with morphine.
- 11. Ordinarily the high blood-pressure needs no specific attention.
- 12. The successful treatment of eclampsia requires much personal attention by the physician.

#### PYELONEPHRITIS OF PREGNANCY.

Writing on this theme in the British Medical Journal of May 18, 1912, ANDREWS points out that almost all writers on the subject are in agreement that the treatment of pyelonephritis of pregnancy should be as conservative as possible.

The general treatment consists of rest in bed, milk diet with plenty of harmless fluids to drink, and regulation of the action of the bowels. Violent purgation must be avoided as being likely to cause miscarriage. Some authorities advise administration of small doses of calomel—for example, grain 1/6 t. i. d.

More special treatment includes administration of diuretics, and urinary antiseptics, alteration of the reaction of the urine, etc. Diuresis is secured by administration of infusion of buchu and sometimes by digitalis. Several writers mention distention of the bladder as causing a reflex diuresis. Andrews states he has no experience with this method of treatment. The most popular urinary antiseptic is urotropin, 15 to 30 grains of which may be given daily. As the organisms are growing in an acid medium the urine should be rendered alkaline or neutral. This is done by administration of potassium citrate, 20 to 30 grains t. i. d., or of alkaline waters. Antitoxin treatment has been tried with good results (Dudgeon, quoted by Thomson Walker). Results of vaccine treatment are disappointing, at any rate in acute cases.

Pain is treated by warm applications to

the loins, and if necessary to the abdomen, by administration of tincture of hyoscyamus 30 minims t. i. d., and by exposure. Sometimes great relief is obtained by having the foot of the bed raised one or two feet, while in other cases a sitting posture may be found to give relief. As a rule the pain soon yields to treatment.

Interruption of the pregnancy should be avoided if possible, and expectant treatment always given a fair trial. Some writers emphasize the increased risk of puerperal infection on account of the septicity of the urine, but in Legueu's 52 cases there was no puerperal sepsis. If both kidneys are affected, and the condition does not yield to medical treatment, and the patient's general condition is going from bad to worse, it may be necessary to empty the uterus.

#### CAECUM MOBILE.

The following résumé of the recent literature on this subject is quoted from the Edinburgh Medical Journal for February, 1912:

It is no infrequent occurrence for the surgeon to operate on a case in which the diagnosis of chronic appendicitis has been made and to find the appendix showing no definite pathological lesion. After the removal of an apparently normal appendix the patient is relieved of his symptoms in many cases; in a certain number, however, no relief is obtained.

In 1908 Wilms drew attention to the fact that in most of these cases the pathological condition consists in an undue mobility of the cecum ("cæcum mobile"), that the appendix is only indirectly affected, and that, to obtain complete relief, not only must the appendix be removed, but the cecum must be fixed in the right iliac fossa.

It has been definitely established that the appendix itself has no afferent painconducting nerve fibers, and thus very pronounced pathological changes may take place in it without giving rise to pain, so long as the serous coat is not involved and no lymphangitis in the mesoappendix is present. The pain-conducting fibers commence in the mesoappendix, and thus swelling or dragging on this fold produces pain or discomfort. Traction on the mesoappendix, from one cause or another, is thus more likely to give symptoms than is a chronic inflammation in the appendix itself.

Cases of "cæcum mobile" are characterized by chronic constipation, with attacks of diarrhea at intervals, and spasms of colicky pain in the right side of the abdomen, often accompanied by vomiting. On palpation, tenderness, gurgling, a feeling of resistance, and sometimes a firm sausage-like swelling in the region of the cecum can usually be made out. X-ray examination after a bismuth meal shows that the bowel content is retained in the cecum and lower part of the ascending colon for twelve to twenty-four hours, or even longer, as if there were some functional obstruction to the emptying of the cecum.

According to Wilms two varieties of movable cecum causing symptoms are to be distinguished. The one is where the cecum is freely mobile but the appendix is comparatively fixed by a short mesoappendix. In such cases a full cecum, sagging down, stretches the mesoappendix, and causes a dragging, painful sensation. In this condition the removal of the appendix will give, as a rule, almost complete relief. The appendix in these cases may become inflamed as the result of kinking; the primary cause of the trouble, however, is the undue mobility of the cecum. The second class of case is one in which the appendix hangs free, has a long mesentery, and is obviously not implicated, but where the cecum is large and movable, and apparently as the result of some chronic irritation in the colon undergoes from time to time spastic contractions which cause pain by dragging on the nerves in the mesocecum. This condition he describes as "typhlospasm." Physicians have shown that such cases may be often relieved of both pain and constipation by the administration of sedative drugs, more especially belladonna, and only after prolonged medical treatment has failed to relieve should surgical interference be undertaken.

The operation performed by Wilms for movable cecum is the raising of a flap of peritoneum from the right iliac fossa so as to form an extraperitoneal pocket into which the cecum is fixed. He has found that not only is the patient's pain relieved by this fixation of the cecum, but that the constipation is cured and the onward passage of fecal matter from the cecum, as evidenced by repeated x-ray examinations, greatly accelerated.

Stierlin records 52 cases of "cæcum mobile" treated by appendectomy and cecopexy in Wilms's clinic. In 43 of the cases the after-history was obtained, and 75 per cent reported themselves cured of both pain and constipation, 16 per cent were improved, and 9 per cent still complained of their old symptoms.

Klose distinguishes two varieties of movable cecum which give rise to similar clinical signs. The one variety results from constipation and inflammatory changes in the cecum, and this, if taken in time, may be cured by medical means; the other is the result of arrested development, and always requires surgical treatment. He recommends an intraperitoneal cecopexy for these cases.

Fischer believes that the symptom-complex described by Wilms is accounted for more by an atonic condition of the cecal wall, the result of a local enteritis, than by the mobility of the cecum, and he prefers to designate the condition "typhlatonie."

Bircher has found that the conditions described by Wilms as "cæcum mobile," and by Fischer as "typhlatonie," are clinically indistinguishable, and he treats these cases by coloplication—reducing the lumen of the large cecum by a vertical tuck.

Hausmann, who independently described this condition as "wandering cecum," has made several contributions to the literature on the subject. He treats these cases with oil enemata and abdominal massage, and where these measures fail, by cecopexy.

Sick has found in many of these cases that the appendix has a short mesentery, and forms, as it were, a tether to the movable cecum, and he believes that the painful attacks are due to a partial volvulus of the cecum round this fixed point. He is no warm supporter of cecopexy.

In cases presenting the symptom-complex of Wilms, Hofmeister has demonstrated the presence of adhesions constricting the ascending colon, and by dividing these and thus still further freeing the cecum has succeeded in relieving the symptoms.

Dreyer, from the examination of a large number of bodies, concludes that a movable cecum is not pathological, it being present in 67 per cent of the subjects examined, and condemns the operation of cecopexy as being unphysiological.

Lastly, Hochenegg insists that the symptoms which are usually referred to as chronic inflammation of the appendix are of a purely mechanical origin, and that the trouble which the appendix has been causing in any given case can be gauged only by the anatomical disposition and relations of the appendix to neighboring organs in the abdomen, and not by the degree of pathological change found in the excised appendix.

## THE ADMINISTRATION OF NITROUS OXIDE AND OXYGEN AS AN ANESTHETIC.

FLAGG (New York State Journal of Medicine, April, 1912) states that this form of anesthesia is advisable because it is safe.

The natural immunity is not affected, nor is the blood harmfully disturbed. There is no tendency to light up latent tubercular foci as in the case of ether. There are no known bad after-effects upon the lungs, kidneys, or any other part of the body. By the method of rebreathing, the presence of carbon dioxide acts as a stimulant to the vasomotor center, preventing shock and reducing a rapid pulse, and the body temperature is preserved.

Oxygen, the best resuscitator, is an integral part of the apparatus. The induction is rapid and pleasant. The recovery is almost immediate and is remarkable chiefly for the absence of symptoms. Without removing the face-piece, ether may be

given by the most approved method. The absence of postoperative sickness insures early nourishment and a short convalescence.

Hewitt, of London, says that "there is no form of anesthesia at present known which is so devoid of danger as that which results from nitrous oxide when administered with a sufficient amount of oxygen to prevent all asphyxial complications."

According to Hamburger and Ewing, whose researches can be found in the preliminary report of the Anesthesia Commission of the American Medical Association, when ether is administered to a patient for even a short operation there is a reduction in the color index which is progressive, reaching its lowest point about the fifth or sixth day. The volume index also shows a drop, which is most marked in the first twenty-four hours, and again on the fifth to the seventh day.

With nitrous oxide the only sign of a low color index is found immediately after the mask is removed and disappears completely in two hours. The volume index is not affected.

It has been recognized for some time that ether increases the toxemia arising from infection. This has recently been shown to be due to the fact that ether impedes the functional activity of the leucocytes, that it lessens the resisting power to infection which normally exists. Nitrous oxide produces no such deleterious effect and consequently increases the chances of a septic case.

The recent work of Dr. Gatch, of Baltimore, based upon the experiments of Professor Henderson and others, indicates the value of rebreathing. Shock has been experimentally produced by overaeration of the blood—that is, by diminishing the carbon dioxide content—and conversely it has been relieved and prevented by the addition of CO<sub>2</sub>.

The method which the writer has used is that employed by Dr. Gatch. Over 2500 cases have been anesthetized by this method at Johns Hopkins. It allows of rebreathing, hence is not only of advantage by increasing the carbon dioxide present but also by preserving the body temperature from reduction by the expired air.

From the standpoint of the patient, this form of anesthesia is ideal. He becomes unconscious almost at once, and upon his recovery is often not even nauseated. This satisfactory state of affairs does not end here, for frequently he can take nourishment at once, and as a consequence of this he may leave the hospital at an earlier date. Postoperative abdominal distention is remarkable chiefly for its absence. The innocuousness of the anesthetic, combined with the stimulant action of the carbon dioxide present, allows the intestinal musculature to retain its normal tonicity.

Oxygen, which is the best antidote for overdosage of nitrous oxide, is constantly at hand. The administrator has but to turn on a valve to secure a pure atmosphere of this gas.

When marked muscular rigidity persists it is advisable to add a little ether. It appears from special research along these lines by Dr. Gatch, that many of the ill effects of ether are due to a lack of oxygen and the fact that ether is being given in too great concentration. It should not be given in a concentration of over 7 per cent. The increased pulmonary ventilation which is secured by rebreathing allows of a rapid absorption of this dilute ether vapor with the minimum amount of harm to the tissues and a maximum saturation of the blood.

The ease with which oxygen may be added in conjunction with this dilute ether disposes of the remaining objection to the use of the closed method, namely, anoxyemia or deoxygenation of the blood.

Ether given by the open or drop method is safe because the low temperature brought about by its evaporation limits the rapid evaporation of further either dropped on the mask. The objection to this method, however, lies in the fact that the rate of respiration being increased, the amount of carbon dioxide thrown off is excessive, resulting in shallow breathing and frequently apnea. This condition reacts upon the

quality of the heart action and frequently results in various degrees of surgical shock.

In order to overcome these physiological difficulties the practice of rebreathing is advocated.

## CHRONIC COLITIS.

LOCHHEAD (Edinburgh Medical Journal, April, 1912) reviews some recent contributions on this subject to the effect that ulcerous colitis as met with in Britain is preceded by long-continued signs of weakness in the mucous membrane of the colon. Some of the cases begin shortly after parturition or abortion. After the weakness comes chronic irritation, with an increased secretion from the crypts of Lieberkühn and a desire to go to stool. Slowly following on the irritation comes ulceration, marked by the presence of blood, pus, and offensive stools, and by a condition of profound toxemia. The lesions rarely give rise to perforation of the bowel or abscess of the liver. The associated toxemia constitutes the danger to life.

It is well to note that the severity of the symptoms does not correspond with the severity of the local lesion, but pain is often a marked feature. Though anemic the patient may not lose flesh, and he may seem to be merely listless and lazy, though the sigmoidoscope reveals a serious lesion. The anus loses its tone, and as soon as it is dilated a foul-smelling discharge escapes. The blood-vessels of the mucosa bleed easily when they are touched. The general condition depends on the toxemia, of which the temperature forms a trustworthy guide. The urine may show the characters associated with chronic Bright's disease. casionally colitis leads to a generalized peritonitis or localized abscess.

Three clinical types of the disease are to be distinguished: Grave cases with diarrhea or hemorrhage; less severe cases of mucomembranous colitis, ulcerative or not, with spurious diarrhea; and cases of dry colitis, with constipation as a more or less marked symptom.

Segond holds that surgical treatment is

never indicated at the outset, but should only be undertaken in a grave case in which medical treatment has proved a failure. On the other hand, operation should not be looked on merely as a last resort in apparently hopeless cases. It ought to be practiced before the large intestine has become greatly thickened and sodden with inflammatory products. If it fulfils its promises, appendicostomy will come to be performed at an earlier stage than at present, to aid medical treatment. Acute exacerbations coming on in the course of the disease. grave hemorrhage, and threatenings of obstruction are further indications for operative treatment.

The principles on which the surgeon acts are to keep the diseased bowel at rest by procuring deviation of the intestinal contents, as in ileosigmoidostomy and the establishment of an artificial anus; to cleanse the canal by copious irrigations and to act directly on the lesions by medicinal agents, as in appendicostomy and cecostomy. Along with these measures an attempt should be made by means of vaccine therapy to render the tissues immune.

The establishment of an artificial anus has usually been carried out too late, and the mortality has been high. As it is difficult to ascertain how far up the colon the lesions extend, and ileostomy is not to be recommended, colostomies should be done as seldom as possible. A cecal anus is best, and this mode of treatment will always have a place in urgent cases, to afford immediate rest to the colon. The early results of cecostomy are good, but the permanency of the improvement is doubtful, and it is only rarely that the artificial anus can be closed, unless ileosigmoidostomy is first performed.

For the treatment of colitis by ileosigmoidostomy, it is essential that the rectum and sigmoid flexure should be free from disease, hence in dysenteric colitis, which furnishes the majority of surgical cases, it is usually contraindicated. In certain cases of mucomembranous colitis, and in those in which constipation is the predominating symptom, it may be performed at the outset, but Segond thinks that even in these conditions it is advantageous to begin with appendicostomy, and only if it fails to have recourse to ileosigmoidostomy. With regard to technique, the space between the apposed mesenteries of the ileum and sigmoid colon should be obliterated by sutures to prevent the risk of subsequent strangulation. In cases of stricture of the colon or tumor around it, it may be necessary to combine ileosigmoidostomy with partial resection of the colon. At present total colectomy is still on its trial, but Segond is of opinion that the incurable nature of ulcers of the large intestine, the profound changes in its wall, and cicatricial kinks may indicate the performance of an extensive, if not total, colectomy.

Except in extremely grave cases in which cecostomy is preferable, appendicostomy or fistulization of the cecum is the operation of choice.

## SURGICAL REMOVAL OF TONSILS.

FOSTER (American Journal of Surgery, April, 1912) describes the tonsil as an encapsulated organ lying in a bed of loose connective tissue in the tonsillar fossa. bounded anteriorly and posteriorly by the faucial pillars. The anterior pillar contains the palatoglossus muscle. Inwardly from this muscle the pillar continues as a band of mucous membrane and joins the surface of the tonsil; it is this mucous membrane band which we perforate with the tip of the finger to gain admittance to the capsule. It is in evidence in prominent tonsils, but is folded upon itself between the pillar and tonsil in buried, atrophic, and cicatricial tonsils. The posterior pillar contains the narrow, sheathlike portion of the palatopharyngeus muscle; above, the pillars joined to form the supratonsillar fossa, the frequent location of peritonsillar abscess. In small cicatricial tonsils it is sometimes necessary to gain admittance to the capsule through this recess.

The outer wall of the tonsillar fossa is composed of the superior constrictor muscle of the pharynx.

The main blood supply is the tonsillar artery, which enters the organ at the pedicle—the lower anterior part. The branches follow the connective tissue sheath and give off a supply to each follicle and to the papillæ of mucous membrane and divide into a meshwork of capillaries.

In a recently enucleated tonsil these branches can be seen following the capsule. The blood supply of the tonsil itself is limited, while the pillars have a rich blood supply.

The surface of the tonsil shows from ten to twenty crypts which penetrate the body to its sheath, and at the bases of these follicles are active mucoid glands. If the tonsil is buried the secretions are retained.

For enucleation he prefers general ether anesthesia, placing the patient to the degree of loss of reflexes in the dorsal position. The first and most important step to insure proper enucleation is to gain admittance to the capsule through the mucous membrane band, which is the continuation of the anterior pillar. This is done by placing the tip of the right index-finger on the abovenamed mucous membrane fold of the right tonsil at its equator.

The operator now directs a few sweeps outward and forward, separating the anterior pillar from the capsule. Ordinarily a slight amount of force only is required, but in atrophic and cicatricial tonsils a fair amount of force is sometimes necessary.

After the important step of reaching the capsule has been accomplished the distal phalanx sweeps upward, outward, and then backward around the capsule as far as the posterior pillar. Now the globe is drawn forward to avoid tearing the posterior pillar, and the finger sweeps around the base. The tonsil is retained in the throat only by the small pedicle. If the tissues are not too fibrous the pedicle is freed by the indexfinger, or by it with the assistance of the thumb; but in very fibrous tonsils the volsellum is used to draw the tonsil through a small snare, and the pedicle is freed close to the wall of the throat.

In order to free the pharynx of blood the patient is quickly turned face downward

(by the anesthetist or nurse) to allow the blood to escape. No sponging is required.

In ordinary cases the time needed for the complete operation does not exceed two minutes. The tonsils are removed entire, and in fifteen hundred cases in which the writer has employed finger enucleation no serious hemorrhage has occurred.

# COMPRESSION OF THE LUNG IN TUBERCULOSIS.

LAPHAM (American Journal of the Medical Sciences, April, 1912) observes that there are hopeless cases of pulmonary tuberculosis which cannot recover with ordinary methods of treatment under the most favorable circumstances. There are also cases that are unable to hold a recovery after it has been made. In these cases, if the lung can be compressed, and kept so for a sufficient length of time, recovery will usually follow. Fifty per cent of advanced cases treated by compression have been reported as permanently cured.

The durable nature of the recovery under this form of treatment is worth considering. Instead of the uncertain restraint of an encapsulating process, with all the dangerous factors of the disease merely rendered latent, we have their complete and permanent removal, and as a result the lung becomes healthy and clean. The disappearance of the tubercle bacilli removes a source of infection months before it can be accomplished in any other way.

The course of recovery is helpful subjectively. The certainty and precision of the method permit a great deal of liberty and the sense of security gives buoyancy to the patient.

When should we attempt to compress a tuberculous lung and when not? If complications exist, sufficient in themselves to forbid recovery, it will avail little to compress the lung. If the sounder lung is not too much involved, it may be greatly benefited by the removal of toxins from the other lung. At present it is generally agreed that only advanced and hopeless cases are suitable for the method. For-

lanini, however, urges its use in early cases. Murphy says that the method is preëminently indicated in the early cases because they forestall practically the only obstacle to success, namely, pleural adhesions.

A lung that is not densely infiltrated and has no adhesions is easily compressed, and the results are brilliant. The dangers and difficulties increase in direct proportion to the amount of lung infiltrated and held out by pleural adhesions, to the degree of obliteration of the pleural cavity, to the distention of the pleural vessels, and to the amount of clotting that has occurred in the pulmonary vessels.

A conservative plan is to give the patient every opportunity to recover by the usual methods, provided always there is no danger in waiting. If, after persistent efforts, the temperature cannot be reduced, nor the extension of the process checked; if after making a good recovery the patient is unable to hold it, but loses whenever any physical effort is made; or if there is some complicating factor, like vicious menstruation that predestines failure—then an attempt to aid the patient by compressing the lung seems amply justified.

# THE RESULTS OF DORSAL ROOT SECTION IN THE TREATMENT OF THE SPASTIC STATE OF CEREBRAL DIPLEGIA.

CLARK and TAYLOR (New York Medical Journal, April 13, 1912) summarize the results obtained with dorsal root resections as follows: In none of the operations in which Sherrington's law has been observed, namely, not more than two consecutive roots being cut, has there been any anesthesia. It must be left an open question, at present, whether or not certain sensory disturbances are to be invariably anticipated after more extensive resection.

In almost all cases some degree of ataxia succeeds extensive resection of dorsal roots in the lumbar region. The ataxia, however, is not great or lasting, as the heightened reflex from a pyramidal disease supplies an element wanting in the somewhat analogous ataxia of the disease of tabes. More-

over, as Foerster justly remarks, an ataxic gait is decidedly to be preferred to inability to stand or walk. In none of the cases has this mishap befallen the operation.

According to experimental data at hand, atrophy would not be expected to occur as the peripheral nerve has its trophic center, the ganglion, intact.

Clark and Taylor believe the operation in the future should be largely confined to Little's disease. As to the results of dorsal root section in detail, spasticity is more or less completely removed at once by the operation in all cases of Little's disease.

As to reflexes the ankle clonus is usually abolished at once and permanently in all cases. The patellar reflexes are not always abolished. The Babinski persisted, as did Oppenheim's tibial reflex. The Achilles reflex was lost or markedly diminished in all the typical resections. In two cases in which ankle clonus persisted the Achilles reflex was also present. The effect, however, of radiculotomy is of theoretical rather than of practical interest.

The abolition, or at least marked reduction, of the defensive flexion reflex is absolutely necessary and has been obtained in nearly all cases. Its marked continuance indicates a failure in the operation. A pathological increase of this reflex causes the irrepressible flexor cramps in diplegics. They are extremely annoying and often painful to the little patients. If no other causes were in evidence, this one alone would prevent walking and standing in the vast majority of cases.

The associated movements disappear entirely, or are diminished to such an extent that children can raise themselves from the recumbent position to the sitting posture without help.

Varying degrees of voluntary movements are reëstablished in all cases. Unfortunately no one can tell just how much of the paretic element is present in a given case until the spastic element is removed by operation. In those cases retaining the most corticospinal fibers the greatest motility is restored. The ideal case is one in which normal locomotion is present before the de-

velopment of the disease. In congenital cases—those usually encountered—other central nerve lesions are more often in evidence than those of the pyramidal tracts, especially those of cerebellar or frontal injuries, and in such we encounter ataxias at the start. A longer and more painstaking after-training is necessary. The striking advantages of the withdrawal of the associated movements by dorsal root section is at once obvious. The ultimate results in all cases operated upon will rest in no small degree upon whether or not the muscular contractions are due to the direct influence of trophic changes in the muscles and increased reflexes and the persistence of the after-training. Decided trophic changes in muscles, joints, and bones make for poor prognosis even with the most intensive form of training. In other words, the ideal case for radiculotomy is one without contractures and atrophies in early life (five to eight years of age), without much mental defect, and one in which the paretic component is at a minimum. It is precisely in mild types of Little's disease that these conditions are fulfilled.

# TREATMENT OF TUBERCULOUS PERITONITIS.

CAIRD (Edinburgh Medical Journal, April, 1912) notes that the findings in abdominal section differ in degree, and consist of a series of types which run into one another, but which may be roughly grouped as follows:

- 1. Cases in which fluid predominates the ordinary exudative form, or this form plus adhesions, the exudate becoming at times encysted.
- 2. Dry forms without fluid, with or without adhesions.
- 3. Dry forms in which the peritoneal cavity is practically obliterated or tubercle has invaded the bowel coat, passing from the serosa.

The majority of the author's patients had already been treated in the medical department without much benefit, and so were referred to the surgical side by the physi-

Surgical treatment consisted in an exploratory mesial incision midway between the umbilicus and the symphysis pubis, or, as occasion seemed to demand, in the linea semilunaris or appendicular region. An attempt was made to find and remove any prominent focus, but no labored or prolonged search was ever regarded as advisable, and on few occasions were tuberculous tubes and ovaries removed or masses of infiltrated omentum. In such cases, or when the exudate was distinctly purulent, drainage was adopted for a short period. As a rule the abdomen was at once closed after evacuating the fluid and freeing such adhesions as could readily be separated. The dry and adhesive form called for operation on account of localized tenderness and the persistence of general symptoms. It was frequently encountered where one expected to meet with an encysted collection of fluid. Manipulative care had to be exercised on incising the thickened peritoneum, which was frequently almost inseparably blended with adherent intestine. In one patient despite special vigilance the bladder was opened. It lay 11/2 inches above the pubes and was fused with the peritoneum. In three other cases the separation of adhesions between the coils of intestinethe serosa of which was infiltrated with tuberculous nodules-necessitated a double enterectomy in order to remove large portions of friable gut. These cases made a perfect recovery despite the adverse condi-Fecal fistula followed simple exploration in two of the purulent cases; one recovered, the other died at home.

As to the immediate results, 28 cases recovered. There were three deaths, all among the exudative type. In the dry form, which is not generally regarded as favorable to surgical interference, all recovered.

With the exception of these fatalities, and a couple of patients in whom healing was not followed by marked relief, all the others received benefit from operation.

As to the end results, but eighteen of the patients who left the hospital healed could

be traced. Nine died at varying periods. Eight are known to be living and well, one two years after operation, one three years, one four years, four five years, one nine years.

It is mainly by the ultimate result that the value of treatment is to be gauged, and even if our ultimate results are not brilliant they more than warrant the procedure. We have to bear in mind that the general state of patients suffering from tuberculous peritonitis is below par; their powers of nutrition and resistance are low, and the subjects referred by the physician for surgical aid have not greatly profited by previous treatment. Hence the mortality is, all things considered, far from ex-The writer does not advocate with König that every case of tuberculous peritonitis should be under surgical care, nor yet will he admit with Borchgrevink that no such case should quit the physician's hands. It is only when medical means fail or appear to be of doubtful utility that surgical intervention is required. It would, however, be advantageous to know precisely what success attends the physician in his treatment of a series of cases in the adult. Caird confesses, and states that he is perhaps to be blamed, that he did not adopt tuberculin or other than general hygienic measures-adjuvants during or after hospital care.

It is doubtful to what extent the dry varieties of tuberculous peritonitis may be regarded as stages in the cure of exudative forms, since the writer has only met with one instance where there had been a preceding exudate.

The curative effect of laparotomy has been ascribed to various factors. The removal of a passive injurious effusion, thus relieving the general tension, the favoring influence of the succeeding hyperemia, the outpouring of an active antibactericidal fluid—each or all may play its part. That cell proliferation is encouraged appears evident, and amongst other observations one may recall that of Bumm, who noted the microscopical appearance and the number of bacilli in the tubercles at a certain

laparotomy. He had occasion to reopen the abdomen shortly afterward, and in the tubercles then removed for examination an invasion by lymphoid cells was observed and a disappearance of the bacilli.

## OPERATION FOR ANEURISMAL VARIX.

DA COSTA (Annals of Surgery, April, 1912) reports an interesting case of an aneurismal varix of the popliteal artery cured by suture of the opening into the artery from within the vein, transverse division of the vein on each side of the opening with utilization of the isolated portion of the vein wall for a superimposed flap which was laid over the line of sutures in the artery, and union of the vein by end-to-end suture.

A longitudinal incision about six inches in length was made over the left popliteal space, and the vessels and the nerve were dissected free from the surrounding structures from above downward to the center of the space. It was found that the vein and artery were directly fused somewhat below the center of the space. There was no intervening sac. The artery distal to the point of fusion was small, but proximal to the same point was much dilated. though not saccular. The vein distal to the point of fusion was very much dilated and much thickened. How far this thickening and dilatation extended could not be determined. The vein above the point of fusion was also enlarged and thickened. A longitudinal incision was made on the outer side of the vein, the opening into the artery found and sutured. The suturing was effected by means of interrupted sutures of No. 0 iodized catgut passed vertically and like Lembert sutures.

On tying the sutures, it was found that so much of the vein wall had been drawn in by the stitches that the caliber of this vessel was greatly lessened. Therefore the vein was divided transversely on each side of the point of fusion to the artery, and this portion of vein wall, about an inch in length, was used as a flap and superimposed over the suture line in the artery and

was sewed to the artery by catgut stitches. The two ends of the vein were then brought together. As the lower end of the vein was the larger, the upper end was invaginated into the lower end and fixed there by four catgut sutures. The junction was reënforced by a few catgut sutures passed through the external coat of the vein at the line of junction. The tourniquets were removed and the blood jumped into both vessels. The blood in the vein was moving toward the body. The artery pulsated strongly and there was not a bit of leakage. Bleeding vessels in the popliteal space were caught and tied. wound was closed by silkworm-gut sutures and no drainage was employed. The knee was placed in a position of semiflexion over pillows.

The patient made an uninterrupted recovery. A week after the operation the stitches were removed, and day by day the leg was straightened out a little. For a couple of weeks the leg swelled a little, but never notably.

## THE END-RESULTS OF FORTY-ONE OPERATIONS FOR INTERNAL DE-RANGEMENTS OF THE KNEE-JOINT.

SHORT (Bristol Medico-Chirurgical Journal, March, 1912) reports fifty-six cases of internal derangement of the knee-joint out of a total of 22,782 surgical in-patients. An after-history has been obtained in fortyone instances. It is noted as remarkable, though in accordance with the experience of surgeons elsewhere, that in at least thirteen operative cases very little deviation from the normal could be found at the time of surgical intervention. In some of these the cartilage was rather loose; in others it was frankly described as normal. As half the cases yielded an excellent result, we must presume that no other abnormal condition was overlooked in these at least, although in one or two cases it is possible that a loose body or synovial fringe was missed. Why knees with little or no recognizable abnormality should produce swelling and attacks of locking persisting over many months is not very evident.

In twenty cases there was an obvious tearing or loosening of one or other semilunar cartilage; in two it was the external and in eighteen the internal that was at fault. The abnormalities were very various. In seven cases the internal cartilage was split. In three cases the internal cartilage was not torn, but very loose. There were one or two instances of each of the following: Anterior end torn free (two). posterior end torn free (two), external cartilage left attached only at ends (two), internal cartilage torn across middle (one). left attached only at ends (one) or only in front (one), anterior part torn away from capsule except at the extreme end in front (one).

The loose bodies were usually composed of bone and cartilage (five cases) or cartilage only (four cases). In one instance the body was derived from the internal semilunar cartilage; in several cases it was noted that there was a depression on the femur from which a piece of bone and cartilage had separated. In several cases there was a loose fibrous attachment. Once there were two bodies present, and such difficulty was experienced in getting hold of the second that it had to be left. after-history is available. A remarkable case in which both knees were full of melon-seed bodies is not included here.

The relation to injury was very definite in nearly all cases. It is precisely stated that in nine patients the cause was a football accident, and in another the game was hockey. Probably there were others besides these.

As to the results of operation in the whole series of forty cases, excluding one in which the clinical picture was quite unlike that characteristic of internal derangement, in twenty-five they are described as excellent, in seven good, in four fair, in four bad. There was no operative death.

There is a remarkable and significant difference between the results in the second and third classes. Where a damaged cartilage was found and removed the operation was extraordinarily successful, and there was not a single failure. On the other hand, when a loose body was removed, there were three unsatisfactory results, and only two quite recent cases could be classed as excellent.

Six patients mention that they now are able to play football again; several are miners, and one is a sailor. One miner is able to do his work without inconvenience after removal of a cartilage from both knees.

## A CASE OF SYPHILITIC REINFECTION WITH THE WASSERMANN REAC-TION STILL POSITIVE.

GITTINGS (British Medical Journal, April 20, 1912) reports an extraordinary case from the fact that it was apparently a syphilitic reinfection when the Wassermann reaction incident to a previous infection was The patient contracted positive. syphilis in 1909, and was treated for two years by inunction of mercurial cream. Thereafter his blood was examined by two laboratories, both reporting positive Wassermann, whereupon his doctor ordered his patient to have a further course of treat-During this interval the patient directed the doctor's attention to an old scar which had recently come into prominence. exposure having occurred five weeks before. The patient was placed upon hydrarg. cum creta gr. iij ter die, but six weeks later the old scar broke down, exhibiting an appearance like primary chancre. The serum from this sore almost immediately revealed the spirochæta pallida.

## STEREOARTHROLYSIS.

Under this title TAYLOR (Surgery, Gynecology and Obstetrics, April, 1912) describes that branch of arthroplasty whose object is to loosen stiff joints and produce new joints with mobility, following ankylosis. His communication should be regarded as purely preliminary. After a review of the literature of arthroplasty, he notes as an essential in forming a new joint that the ankylosis must be broken up,

either by force or cutting asunder the components of the new joints. There must be an appreciable space between the bones composing the proposed articulation. Except in those cases in which a simple agglutination has occurred between the synovial surfaces, and no pronounced thickening of the synovial membrane or capsule or any necrosis of cartilage and bone has occurred, reunion will unfailingly when ankylosis is broken Hence, after true fibrous or bony force. ankylosis is broken up something must be interposed between the opposing denuded surfaces and remain there until such time as the denuded surfaces have healed and will no longer readhere or grow together.

This "something" must be innocuous, of sufficient thickness and toughness to prevent contact between the opposing surfaces, filling every nook and cranny in the proposed joint; it must be absorbable, but not absorbable with such rapidity that it disappears from the newly-formed articulation before all granulations have healed. A "something" is necessary that can be put into the newly-formed articulation in a liquid form to fill all crevices, that will rapidly congeal and harden, and when in liquid form will be at such a temperature that no scalding of the tissues can occur, and, at the same time, at body heat will not soften sufficiently to spread and allow contact between the bones.

Taylor in the solution of this problem used a number of substances, among them wax, lard, tallow, lanolin, and cocoa-butter. The animal experiments have proven the feasibility of the procedure. The first case, one of rheumatoid arthritis, nine years old, was operated on twice, the ankylosis being broken up in the knee-joint by means of an osteotome and a periosteal elevator, and the necrosed bone being curetted away at the eroded points; also the diseased cartilage. The patella was chiseled free. The articulation was filled with a mixture of wax 1, lanolin 5, cooled down to about 108°, an abundant supply being put between the patella and femur, after which the joint was held at an angle of 45 degrees until the paste hardened, when the synovial membrane was sutured (also capsular ligament) with continuous silver wire. The leg was put up in a plaster-of-Paris cast at an angle of about 45 degrees. This was removed in one week and the leg was manipulated under anesthesia, after which the patient was put up in traction. At the end of the second week, primary healing having occurred, all dressings were removed and extended manipulation attempted, but this was too painful, so at the end of the third week the patient was anesthetized the second time and the knee manipulated, it being found that there was only about 35 degrees of motion, but the patella was freely movable; the limitation of motion between femur and tibia was due to malformation and transformation of the articular ends of the bones, and not to adhesions.

The knee was opened again, and a large portion of the articular surface of the external and internal condyle was chiseled and curetted away, also a small portion of the articular surface of the tibia, leaving a gap of over one centimeter on both inner and outer margins of the joint. Much of the capsular ligament was removed, but the crucial and lateral ligaments were preserved. The joint cavity was then filled with paste preparation, which was injected as a liquid. The paste consisted of the following proportions: Yellow wax, 1 part; mutton tallow, 2 parts; castor oil, 2 parts; with 15 grains to the ounce, by weight, of bismuth subnitrate. This wax melts at 140° F. (60° C.), is semisolid, and begins to congeal at 128° F. (53° C.). The mixture should be drawn up in the syringe again and again to get a uniform suspension of the bismuth, and for cooling purposes.

The bismuth is for the purpose of enabling x-ray pictures to be taken. Three weeks after operation the patient had between 30 and 40 degrees of voluntary flexion with little pain.

The second patient, one of tuberculosis of the right knee, ankylosed firmly in full extension, exhibited one month after op-

eration voluntary flexion of about 60 degrees.

The writer calls attention to the entire absence of fever resulting from the unirritating nature of the interposed substance, nature tolerating it well. Voluntary active motion is soon possible, as it is practically painless, and the range of motion, if sufficient fibrous and osseous tissue is removed at the time of the operation, should approximate normal limits as soon as the involuntary muscular rigidity from the patient's timidity will permit. Reformation of adhesions has not thus far been demonstrable, even under anesthesia.

Lanolin 2 parts, and wax 1 part, forms a smoother articular wax than when combined with other substances and less likely to form hard, lumpy masses under the skin incision. The mistake should not be made of putting too much wax into the joint, only sufficient being used to separate the eroded surfaces.

## CURE OF HYDROCELE BY LYMPHAN-GIOPLASTY.

CHATTERJI (Indian Medical Gazette, April, 1912) suggests the following operation in the cure of hydrocele, although he adduces no clinical cases in proof of its value:

The patient is prepared in the ordinary way. The part is shaved and cleaned on the previous day; when dry, pure tr. iodi is painted on and covered when dry with sterile gauze and bandage. On the operation table another application of tr. iodi is made. A medium-sized trocar and cannula is used, the hydrocele being tapped anteriorly a little lower than the middle of the swelling. A strong flexible probe or needle is threaded with 12 or 24 inches of threeor fourfold No. 10 or 12 tubular silk. This is introduced into the sac through the cannula, made to pierce the tunica vaginales and (as far as can be estimated) infundibuliform fascia, cremasteric fascia (int. obl.), intercolumnar fascia (ext. obl.), and dartos, and made to insinuate between the dartos and the skin of the scrotum and led upward toward the inguinal region. Halfway to Poupart's ligament the needle is brought out through the skin and reintroduced and led to the inguinal region, where it is made to emerge. The silk is then pulled through by the needle, if necessary with the help of a pair of forceps, and the end hanging out of the cannula is introduced for a fair length into the sac, the scrotum being so manipulated that the four ends of silk spread out inside the sac. The inguinal end of the silk is pulled up and cut short so that the cut end sinks deep under the skin. The punctures are sealed with collodion and a light dressing applied. The silk is bisterilized and gloved hands are used, or the hands after a complete course of cleansing are dried and painted with tincture of iodine.

Rest with support of scrotum on a bracket for three days is enjoined, and then the patient is allowed up with the scrotum supported.

The rationale of the operation is based on the principle of internal drainage of the serous cavity by the capillary action of the silk threads which act like artificial lymph-channels. The writer states that he has drawn his idea from Mr. Sampson Handley's Hunterian Lecture, 1910, on Surgery of the Lymphatic System, where he describes an operative treatment for ascites by "internal drainage by silk threads." His operation of lymphangioplasty for lymphatic edema is on a similar principle. The author states that Mr. Handley has published one case with successful results for ascites.

## AN OPERATION FOR THE CLOSURE OF CLEFT PALATE BY GRAD-UAL PRESSURE.

SHEA (International Journal of Surgery, April, 1912), after calling attention to the fact that one may change the character of a person by correcting abnormalities of the face and jaws, states that it is almost a crime to permit deformed patients to go unrelieved. He advises an operation which he states is applicable any time during the first year and preferably during the first

six months of life. He passes a needle threaded with strong silk through the superior maxilla at a point just under the malar process, and high enough to be above the palate. By means of this thread the free end of a compression bar is drawn through the bones. This bar is made of gold and platinum wire of about 18 gauge, threaded from both ends toward the center. The length of the bar is adjusted to the case. The bar is held in position while lead gaskets, silver plates, and nuts are adjusted, the plates and gaskets being trimmed to fit the convexity of the buccal surfaces of the bones. Nuts are screwed on the outside of the plates on the bar, with a small wrench, until a slight degree of pressure exists. The surplus ends of the bar are snipped off whenever they protrude sufficiently to interfere with the tissues on the inner side of the cheek. To the anterior end of the silver plates are soldered two small hooks for the purpose of reducing the premaxillary bones when they are involved. This is done by passing a rubber band through a small ring which has been soldered to a piece of silver suitably formed to fit the convexity of the premaxillary bones. The free ends of the rubber band are attached or slipped over the hooks on the anterior portion of the buccal silver plates. He depends upon the pressure from the elastic band to gradually reduce the premaxillary bone. It is often necessary to cut a "V" from the vomer in order to get the premaxillary bone in position.

The length of time required to bring the margins of the cleft in close enough apposition for scarifying and suturing will depend upon the age of the child and the amount of resistance offered by the osseous tissue—approximately two weeks.

The nuts used on the compression bar are of gold made with a fair-sized flange for the purpose of pressure distribution. When the margins are sufficiently close to scarify and suture the patient is again anesthetized and the closure of the cleft is completed, leaving in position the compression bar to relieve tension until union.

Special attention should be given to the

nasal fossæ so that there will be no crowding of the parts.

The compression bar is flexible, and an anesthetic is not required to remove it.

## APOPHYSITIS OF THE OS CALCIS.

SEVER (New York Medical Journal, May 18, 1912) draws attention to the fact that there is a painful condition of the heel often called to one's attention which always occurs in children, generally those who are over weight for their years, are physically active, and have strong muscles.

The child is usually seen on account of a slight persistent limp, with a marked disinclination to complete the full step in walking. There is also tenderness complained of about the posterior aspect of the heel, low down, which has persisted for several weeks or months without change. child has usually worn a low shoe or sandal, with either a spring heel or none. There may or may not be a history of injury, but the child is generally well over weight for its years, has been very active, and is strong physically. There also may be a slight amount of pronation of the foot. That the condition may also be secondary to undue shoe pressure on the heel from a tight or too close fitting counter has not been determined.

An examination shows a moderately tender area on pressure over the posterior portion of the os calcis, deeply situated, and localized in front of the tendo Achillis on either side. There is invariably moderate porky thickening about the whole posterior portion of the os calcis, with some tenderness, and with partial obliteration of the hollows on either side of the tendo Achillis. The motions of the foot are all slightly limited, especially in full dorsal flexion, and any movement which tends to put a strain on the tendo Achillis causes There is pain and tenderness on weight-bearing when the heel is put on to the floor, but less so when walking on the toes with the heel elevated.

The disease resembles somewhat the condition known as achillobursitis, an inflam-

mation of the bursa between the tendo Achillis and the os calcis, but is much more extensive and deep seated. There is also to be considered before making a diagnosis the condition of tenosynovitis of the tendo Achillis, and calcaneal spurs on the under surface of the os calcis. These spurs, however, rarely if ever appear so early in life. Tenosynovitis is easily distinguished by the presence of the tendon crepitus and pain referred to the tendon itself. There is also the condition where the bursa between the tendo Achillis and the skin of the heel is irritated from shoe pressure, which has to be differentiated. The x-ray will usually clear up the question at once, but even without this the condition is fairly characteristic.

The x-ray findings are of interest and are practically constant whenever the ossification of the epiphysis is sufficiently developed to show the characteristic changes.

There is always to be seen in comparing the plates of the two feet an enlargement of the epiphysis itself on the affected side. both in thickness in the anteroposterior plane and also in length from top to bottom. There is also considerable cloudiness along the epiphyseal line, between the epiphysis and the os calcis, suggesting a deposit of new bone, and often with a partial obliteration of this epiphyseal line. These findings are typical and constant, and never occur in any other condition. Often the condition suggests a slipping of the epiphysis, with the customary inflammatory reaction following such a condition, or epiphysitis. Similar conditions existing in the tibial tubercle have been spoken of as Schlatter's disease.

In differentiating this condition from tuberculosis, it must be remembered that tuberculosis generally attacks the anterior portion of the os calcis, does not lead to bony atrophy, and is usually unilateral.

The treatment is usually simple, easily applied and carried out. There are two indications to be met, namely, to relieve the strain on the tendo Achillis, and to prevent undue weight-bearing on the heel.

For the purposes of relieving the tendo

Achillis, which is attached in part to the epiphysis, the heel of the shoe is raised one-quarter to one-half inch, and the stiff counter of the shoe is removed to prevent any pressure. Strapping the heel with several vertical strips of narrow adhesive plaster, extending around the heel and well up the leg on either side, gives great relief and support. If there is much element of pronation present an eighth-inch lift is put on the inner edge of the heel to tip the foot out slightly.

To prevent pounding of the heel in walking, a rubber heel is fitted to the shoe, and a pad of sponge rubber is put inside the heel of the shoe to make a soft elastic pad on which the heel may strike. In connection with these procedures hot and cold douches applied daily, electric light baking, and rest are of great additional help.

The duration of the condition varies greatly. There may be a complete cure in a few weeks, but more often the condition persists for several months and may recur at a later period of growth before puberty following overuse or injury under unfavorable circumstances. Ultimately, however, the condition is cured by the fusion of the epiphysis with the os calcis.

Apophysitis of the os calcis is not an unusual condition. It may occur from muscle strain in rapidly growing children. It may occur less frequently from direct trauma, but presents then the same clinical picture. It never occurs after puberty. The treatment is rest and protection. The cure in all cases may be arrived at eventually.

# TREATMENT OF TUBERCULOUS GLANDS OF THE NECK IN CHILDREN.

SUTCLIFFE (Practitioner, May, 1912) in considering the treatment of tuberculous glands in children, more especially those of the neck, calls attention to the fact that in a very large number of cases there exists a probability of spontaneous cure, if suitable surroundings are provided and the causes of irritation removed. Perhaps the greater number of the infections of child-

hood follow tonsillar and pharyngeal disturbances, and, though it is doubtful if more than a small proportion of these are primarily tuberculous, it is quite certain that the enlarged glands which follow an attack of tonsillitis furnish a very suitable soil for the propagation of tubercle, and that, unless the child is removed to healthy surroundings, and the possibility of further infection diminished by the removal of the infected tonsils and clearing the nasopharynx, they will soon be typically tuberculous.

It is at this stage, before the caseation has taken place, that the general hygienic treatment is successful. When glands have existed for more than six months it is probable that caseation has already begun, and that operation will sooner or later be called for, though it is true that even when glands have existed for a much longer period they may still disappear. The essential point in the treatment is that sufficient rest should be given to the patient. The ideal method in the larger number of cases is to put the child to bed on a veranda with a good sunny aspect and to keep him there night and day, until the glands are definitely diminishing in size. But for the ordinary case, the usual practice is to send the child out-ofdoors all day in a spinal chair. The head and neck are kept as still as possible, and bandaged firmly over a large pad of absorbent tissue. The observation of children treated with and without tuberculin has revealed no perceptible difference in the rate of absorption of affected glands, whatever its effect on the opsonic index may have been. In those young children who show an extraordinary susceptibility a dose of 1/50,000 of a milligramme, increased after two weeks up to 1/25,000 of a milligramme, does not seem to be followed by any bad symptoms. The dose is administered hypodermically, and is given every eight days, preferably in the evening when the child is about to be put to bed. Larger doses are apt to produce a considerable local reaction, which very often brings suppuration in its train.

In children practically the only cases

which require operation are those in which suppuration has already taken place. Soft, large glands, especially when painless, and small hard ones can safely be left alone. The former, if due to enlarged tonsils, will in most cases disappear with the removal of the causes of irritation; the latter are firmly encapsulated and do little or no harm.

Where sinuses exist, as the result of the bursting of a superficial collection of pus, an operation is usually called for to remove the deep-seated gland that is the cause of the trouble. Several such cases have come under the writer's care after prolonged vaccine treatment, and have healed rapidly after the removal of the focus of disease. In the case of boys of ten years and over operation can more readily be recommended, as the presence of the glands is often a bar to his remaining at a public school, or presenting himself for examination for the navv. Quite young infants are sometimes the subject of very troublesome forms of gland infection, most probably caused by milk infection at the time of the first dentition. In these, whole groups of glands are rapidly affected and quickly suppurate. Usually, one of the most superficial glands has either burst or been opened before the case reaches the operator, and some weeks often have to be spent in improving the child's general health before an operation for removal of the entire affected area can safely be undertaken.

There is considerable risk in the operation, for which a skilled anesthetist and a rapid operator are alike essential. The incision should be made in the creases which run more or less obliquely across the neck. In the larger cases, in which an exposure of the whole length of the internal jugular vein is needed, the surgeon will find if he is prepared to take a little extra trouble that two parallel incisions, the upper one in the fold before referred to, the lower a little above the clavicle and curved slightly upward at its posterior end, will afford quite sufficient room for the efficient removal of glands, and leave an immeasurably superior cosmetic result than any of the flap operations formerly employed. These transverse,

or rather oblique, scars fade away into something very nearly approaching invisibility, a factor of very considerable importance both to the patients and their relatives.

In the smaller cases, in which a bulging, fluctuating swelling presents under the angle of the jaw, in front of or over the sternomastoid, with a thickening to be felt beneath it, the pus may be contained in a disintegrating superficial gland. But often what appears to be a gland is only a bag of pus connected with the caseating glands beneath, through an opening that it has made in the cervical fascia. The treatment called for does not differ from that followed when the glands themselves are obviously the seat of the suppuration, for when one is broken down its fellows are certainly infected, and the entire corresponding area should be cleared out.

The details of the operations for glands are simple enough, but their satisfactory performance through a small incision makes considerable demands on the operator's skill. A firm sand-bag having been placed under the neck and the head turned to one side, the incision is made, as a rule, through the lower of the two folds in the skin that runs obliquely from the middle line. In the first instance it need not exceed an inch and a half in length. Both edges are freed from the platysma and the fascia beneath for half an inch or more to insure mobility, and the upper edge is then dissected up as far as the upper border of the swelling, taking care not to puncture it. The branch of the facial to the lower lip is carried up, when the fascia is divided, out of the way of the knife, and a disturbing deformity is thus avoided. Retracting forceps are then placed on each side and the upper one drawn well up toward the angle of the jaw.

At this stage, if there is present one of the bags of pus already referred to, as much of its wall as possible should be removed and its cavity well wiped out with a dry swab. If there is a definite gland presenting, its posterior edge will certainly go beneath the sternomastoid, and the border of that muscle is the next thing to be defined. When the muscle is spread out over a bulging gland, the border is found much more forward than would be expected; but when, as is often the case, the bursting of the gland has taken place through the substance of the muscle, unless the real anterior edge be picked up, the surgeon will be undesirably uncertain as to his whereabouts. For this reason the original incision is carried well forward of the muscle, and the fascia is picked up and divided from the anterior end of the incision till the border of the muscle is reached, which is then freed from the glands beneath with the gloved finger as far as convenient in all directions. With the muscle then well retracted and the edges of the wound drawn out of the way as required, sufficient exposure can be obtained for the safe delivery of all the glands in the anterior triangle, and most of those. in the posterior. The length of the incisions, and the consequent size of the scars, will depend on the trouble the surgeon takes in obtaining proper retraction.

Either the upper or lower group of the glands is now seized with forceps, and its removal proceeded with. If the dissection is begun from above, it is best to free the anterior margin of the gland, as the facial vein can then be seen and avoided; when traced downward, it is a guide to the position of the internal jugular. The glands are then gradually freed from surrounding structures by dissection with the point of a sharp knife, care being taken to remove the capsule with the gland. At the upper border of the group the presence of the digastric fibers, passing downward and forward, warns the operator that he is nearing the region of the internal jugular vein, and, still more important, the spinal accessory nerve. This is put on the stretch when the sternomastoid and glands are pulled upon, and is liable to be injured if the knife is used on the muscular side of the glands. It is safe, if two golden rules are adhered to-always to cut directly on to the gland, and to make sure of a good light. Injury to the vein can always be avoided if the case is being operated on for the first time, and if its connections are unobscured by

bands of cicatricial tissue. As the glands are freed, they are pulled out as far as possible in one mass, but it will usually be found that a few, in intimate relationship with the posterolateral aspects of the internal jugular vein, will require removal separately. They require careful dissection, but no case is completely dealt with unless the vein is seen quite clear on its outer aspect in the whole field of view. If it be decided to begin the dissection from below. the lowermost gland is seized with the gland forceps, and the mass peeled upward off the vein by light touches of the knife on the under surface of the capsule. This is adherent to the sheath of the vessels, and the vein falls away readily as touches are made on the fascia connecting them.

Glands in the submaxillary region are easily removed through a comparatively small incision, but there are always two or three in intimate relationship with the salivary glands, which must not be overlooked. Glands in the upper part of the posterior triangle—that is to say, those above the spinal accessory nerve—are dealt with by prolonging the original incision backward over the sternomastoid. The 'posterior border of the muscle is then lifted up and held forward, the glands are seized with forceps, drawn backward, and cleared by cutting on their superficial surface till they are freed from their attachments to the fascia about the vessels. The hindmost of the group is then lifted up, and the whole mass dissected forward off the muscles till the front limit of the dissection is reached.

At the present time, when cases are submitted to operation comparatively early, this incision gives sufficient room to remove glands from nearly as far down as the clavicle. It must be remembered, however, that the spinal accessory nerve is apt to run between groups of glands. When this is seen in the dissection in front of the muscle, it is best to remove the glands in three groups, those above the nerve before it enters the muscle being removed from behind it, separately from those removed by the dissection in front. A further dissection must be undertaken for the glands below its course in the posterior triangle, and for

those in the subclavian triangle. This incision begins about an inch above the clavicle, at the inner border of the clavicular insertion of the sternomastoid, and extends to well over the edge of the trapezius according to the size of the group to be removed; if necessary, its tail can be prolonged upward toward the upper incision. The skin and platysma are raised from the muscles and glands beneath. The external jugular vein at the inner end of the incision can usually be avoided, and drawn forward with the sternomastoid. When this muscle is freed and raised up, the innermost of the group of glands is sought for, and is found in intimate relationship with the sheath of the main vessels. Its upper surface should be clearly seen before seizing it with the gland forceps, when a few touches of the knife will free it from the bulging internal jugular, and occasionally from the subclavian. When sufficiently freed from these structures, the finger can be inserted between the group and the veins, and the entire supraclavicular group dissected backward. When freed and lifted from the floor of the triangle, the glands along the back of the internal jugular are freed from their attachments, as far as the place where the spinal accessory crosses the space. The nerve can, as a rule, be defined, if the trapezius be pulled backward and its oblique course remembered.

If, during the operation, the spinal accessory nerve is seen to be wounded, it should be sutured at once, as there can be no question as to the unsightly deformity produced by the wasting of the trapezius, and the still greater disability if the nerve is divided on the inner side of the sternomastoid. The author has seen many instances of both types of deformity, and in some a marked spinal curvature resulted.

Suppurating glands over the parotid, in front of the ear, are best dealt with by a longitudinal incision down to the capsule of the gland; the caseous matter is then shelled out with a sharp spoon. The facial nerve lies in the substance of the parotid, and as the glands are always on its superficial surface, the nerve is in no danger if ordinary care is used.

## REVIEWS.

A TREATISE ON TUMORS. By Arthur H. Hertzler, M.D., Ph.D. Illustrated with 538 engravings and 8 plates. Pp. 725, xi. Lea & Febiger, Philadelphia and New York, 1912.

From Johannes Müller and from Rudolph Virchow to Ribbert, to Borst, and to Lewin, German writers have maintained the field of scientific laboratory study of oncology. English-speaking scientists have striven to give to the profession most able dissertations on the clinical phases of tumors. The monographs by Bland Sutton, by Senn, and others have afforded abundant record of the advances maintained by observing accurate clinicians of large experience. The present appeal is largely to surgeons, one might say to general surgeons, and cannot replace many valuable treatises on special phases of tumor study at present available and embracing neoplasms of the mamma, of the uterus, of the brain, of the mouth and jaws, and of the stomach.

The volume is divided into three parts; less than forty pages is devoted to the general biology of tumors, included in a single chapter. The special pathology of tumors comprises eighteen chapters, each devoted to some particular neoplasm or group, as osteoma, sarcoma, carcinoma, and so on through the list. Part III, embracing twenty-six chapters, 495 pages, is the most bulky and on the whole the best part of the work.

In considering the general biology of tumors one is somewhat refreshed to see the admittedly time-worn theories concerning the origin of neoplasms concisely presented and cavalierly condemned. The author appears open-minded, but with a strong inclination to accept some phase of cell anatomy, based on the assumption that the causal influence lies in the cells themselves. that they are the essentially changed structures, but leaves nothing conclusive as to the basis of the change the results of which are so evident. What this intangible, indefinable influence is or has been he admits remains unknown. Classification is along beaten pathways, histogenetic in basis, less philosophic than that suggested by Adami—whose views at least might well have been incorporated—but a good working, generally applicable nomenclature; it is not more, nor can it in the present state of our knowledge be much less.

The chapters dealing with what the author terms the special pathology of tumors follow trite lines, but contain wellstated facts; the balancing does not always appear even, but this must be a matter for individual determination. Lipoma receives about one printed page; calcific nodes in fatty tumors are not mentioned. The author offers no solution for the still unsettled oncologic positions of "hypertrophied scars," keloid, Recklinghausen's disease, elephantiasis, and multiple myeloma. In a clinical work, such as the present, polemics may wisely be avoided. The chapter devoted to syphilis, tuberculosis, actinomycosis (seven lines), glanders (five lines), leprosy (two lines), rhinoscleroma, botryomycosis, and mycosis fungoides, and embracing in all less than nine pages, might well have been omitted.

Over two-thirds (495 pages) of the volume is devoted to a consideration of the regional occurrence of tumors. Here the author has done his best work, and, although a captious critic might point out minor defects, fully deserves congratulation. This part is largely clinical and abundantly illustrated. Considering the marvelous results attained in the treatment of angiomas with radium, that agent should certainly have been mentioned. In so pretentious a work it seems to the reviewer that as exact direction should be given for the use of x-rays as for the knife; certainly one would like to know Dr. Hertzler's opinion as to the use of massed doses, and his advice concerning the selection of cases adapted to Roentgenologic treatment. These are, however, omissions of minor import compared with the more carefully considered details of diagnosis, prognosis. and treatment with which this part of the work abounds. Facts are logically presented, adequate space is given to differentiation and the proper handling of obscure and doubtful cases.

Citations of literature are irregularly distributed through the text, and there is no pretense to exhaustiveness in this respect. In a rapidly advancing science a publication fourteen years old hardly merits being called recent (p. 88); many of the references are to bibliographic articles or monographs, and thereby the student is placed in touch with the literature.

Typographically the volume leaves little to be desired; the half-tone reproductions are exceptionally good, and the press-work and binding of excellent quality.

W. M. L. C.

STOMATOLOGY IN GENERAL PRACTICE. A Textbook of Diseases of the Teeth and Mouth for Students and Practitioners. By H. P. Pickerill, M.D. The Oxford University Press, New York, 1912.

This volume of about two hundred and fifty pages is well described in its title. It is copiously illustrated, and the importance of its subject is emphasized by the motto which opens the preface, to wit: "He that keepeth his mouth keepeth his health." Within recent years the importance of cleanliness of the mouth in relation to the development of disease has become more and more emphasized and is now well rec-Altogether there are seventeen ognized. chapters and three appendices. The author discusses the development, anatomy, and physiology of the teeth and adjacent structures, deformities of the teeth and jaws, and inflammatory conditions of the mouth. He then takes up inflammations of the gums, caries of the teeth, and the preventive treatment of caries. The surgical treatment of dental disease and the fractures and dislocations of the jaws follow. There is also a chapter on oral tumors and another upon the manifestations of systemic diseases in the mouth. The fifteenth chapter deals with oral sepsis and its effects, and the sixteenth with oral disease in relation to various lesions of the nervous system. The last chapter deals with local and general anesthesia. The first appendix deals with the methods of examining the

mouth, the second gives formulæ which are useful in treating diseases of the mouth, and the last appendix deals with dental instruments. This appendix, however, is of very little value and is based upon an English instrument catalogue. To those who are interested in stomatology, either as dental practitioners or as general practitioners, this book can be cordially recommended.

A Text-book for Nurses. Including Anatomy, Physiology, Surgery, and Medicine. By E. W. H. Groves, M.S., F.R.C.P., and J. M. Fortescue-Brickdale, M.A., M.D. The Oxford University Press, New York, 1912.

In the four hundred large and closelyprinted pages of this volume the authors have managed to include an immense amount of valuable information which is not only useful to the nurses for whom it was prepared, but which also will prove of value to many practitioners, both old and young. At first glance one would presume that it would be impossible to deal with so many broad topics in one volume, and it goes without saying that many departments are necessarily brief. In nearly every instance, however, the salient and important points are adequately considered. The book is handsomely printed on heavy paper, and has so many concrete statements in its pages that we intend to keep it rather than present it to any nurse. While some of the illustrations and some of the text deals with matter which can scarcely be said to concern nurses, as, for example, syphilitic disease of the skull and tuberculosis of the joints, and while many of the illustrations are taken from standard works on surgery, these illustrations nevertheless serve to make clear to the general practitioner as well as the nurse steps which are followed by the surgeon in his operative work.

TRAITEMENT DE LA TUBERCULOSE. Par Albert Robin. Troisieme Serie. Vigot Freres, Editeurs, Paris, 1912.

Rightly or wrongly English and American physicians have within recent years come to look upon many of the French contributions to therapeutic literature as being somewhat unreliable, probably because not infrequently the French therapeutist seems

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to be extraordinarily optimistic as to what drugs can accomplish, but in these days, when there is such a vogue for the climatic, hygienic, or sanatorium treatment of tuberculous patients, it is rather refreshing to find so competent a therapeutist as Robin bringing forward the drugs which can be used with advantage in association with other measures. While it is doubtless true that in the past tuberculous patients were drugged to a degree which amounted to an abuse, it is equally true that much comfort and help toward getting well can often be given the patient by the sensible use of well-chosen remedies. Although the enthusiast who is in favor of remedial measures other than drugs in tuberculosis may scoff at many of the recommendations which Robin makes, the book nevertheless contains a good deal of valuable and reliable information.

KIDNEY DISEASES. By W. P. Herringham, M.D., F.R.C.P. With Chapters on Renal Diseases in Pregnancy, by Herbert Williamson, M.D., F.R.C.P. The Oxford University Press, New York, 1912. Price \$5.50.

It is evident from the title of this book that it deals with strictly practical material. The opening chapters deal with the normal and abnormal anatomy of the kidney, with its physiology and with the pharmacology of drugs which affect this organ and with the normal and abnormal constituents of The following chapters are the urine. taken up with the methods of urinary analysis, with hematuria and hemoglobinuria and dropsy. Following this there are chapters upon the various forms of nephritis and its treatment, the cardiovascular lesions which are associated with nephritis, and other chapters dealing with renal diseases which do not come under the heading of acute or chronic degenerative changes in these organs—such, for example, as cystic kidney, pyelitis and pyelonephritis, and tumors. The special chapters dealing with the kidney disease in pregnancy are particularly interesting and important, as they take up the association of hepatic lesions, the dangers of renal complications, and the methods by which they should be treated. As we have already stated, the character of the text is distinctly clinical. Numerous excellent illustrations showing pathological conditions are given, and a fair bibliography is appended to each important chapter.

Tuberculin Treatment. By Clive Riviere, M.D., F.R.C.P., and Egbert Morland, M.B., B.S., M.D. The Oxford University Press, New York, 1912. Price \$2.00.

This excellent little manual, which brings the subject of tuberculin therapy up to date, will doubtless prove of interest to a large number of readers, as it not only gives directions as to the administration of tuberculin and the objects which are to be attained by its use, but specific directions as to the tuberculous conditions in which it can be expected to do most good. If the book by being widely read will serve to impress the general practitioner that he should not use tuberculin unless he has had some special training in its employment it will do much good. If it serves to encourage the general practitioner in the use of this very active substance so that he will give it in haphazard fashion it will do much However, we think that any one who reads the text with care cannot fail to be impressed with the fact that this agent is one which possesses power, and that no one can afford to abuse it.

MATERIA MEDICA AND THERAPEUTICS. An Introduction to the Rational Treatment of Disease. By J. Mitchell Bruce, M.A., LL.D., M.D. Assisted by Walter J. Dilling, M.D. Ninth Edition, Revised. Cassell & Company, New York, 1912. Price 6/6.

Bruce's little book, which is small enough to go into the pocket, yet covers nearly 650 pages, is a condensed manual of Materia Medica and Therapeutics in which important points are emphasized by the use of heavy-faced type. It is surprising how much information the authors have been able to condense in so small a space. The junior writer has endeavored to bring this the ninth edition up to date, and has succeeded admirably in almost every respect. When we remember that this edition makes the "fifty-fourth thousand" it will be seen that the text must contain material which has been found valuable both by students

45 fine to make those people who are really afraid of draughts to open their windows during the daytime, and as there are only two sanitary inspectors in this thickly populated borough the lovers of stuffy rooms will probably be able to defy the law for many a long day to come.

The Metropolitan Asylums Board has been obliged to ask for increased estimates this year. Part of this is due to the increased cost of coal and provisions, which have all been unfavorably affected by the labor troubles of the past year, but we regret that part of this expenditure is due to the necessity for making provision for an increased number of lunatics. Although the general health of the community has been improved and the death-rate lowered by the administration of the sanitary laws, the number of mental cases does not decrease, and of late there has been a steady increase in the number of lunatics in our public asylums. The struggle to obtain a livelihood has become so keen that many minds of unstable balance give way under the strain.

A great Congress of all the Universities of the Empire is now being held in London. Delegates have arrived from the fifty-four universities of Great Britain and the universities' dominions. They comprise great scholars, experienced organizers, and many famous public men; indeed, every kind of talent in the seats of higher education throughout the empire will be represented. The subjects for discussion comprise all questions of practical importance in university work, and each problem as it arises will be introduced by the men who have the greatest authority on that particular subject.

The Housing of the Working Classes Bill has succeeded in finding its difficult way through committee and has now been reported to the House of Commons. This bill is likely to prove a useful measure, but unless the government takes it under its wing and stars it for preferential treatment it is not likely to reach the Statute Book this session.

Trinity College, Dublin, has recently been celebrating the bicentenary of the founda-

tion of her medical school, and right royally were we entertained there. Numerous receptions were held by the College, the College of Physicians, and the Chancellor of the University (Lord Iveagh). We were also entertained to dinner at the graduates' banquet July 4, and by the Provost and Senior Fellows July 6. At the first of these two dinners there were about 500 present, and at the second about 300. Congratulatory addresses were presented in the morning of July 5. These came from universities and colleges in Great Britain, the continent of Europe, America, India, and as far away as Japan. Sir William Osler presented that from Oxford University, and some amusement was instilled into the proceedings by the orchestra striking up Yankee Doodle, which produced a smile and wave of the hand from the Regius Professor. The addresses were received by the Chancellor and Some of the visitors went over Provost. the large works where the celebrated stout is produced, and were afterward lunched in the same buildings, and I understand that some of them afterward found the return journey to Holyhead not so pleasant as they had anticipated. Memorials were also unveiled to Stearne, who did so much for the College in the early days, and to Professor Cunningham, the anatomist, who spent a large part of his life in Trinity College before going on to Edinburgh. Honorary degrees were also conferred on some of the distinguished guests. At all these festivities academic costume was worn, and Dublin presented a very bright appearance. Trinity College is situated in the very heart of the city; it consists of commodious buildings around a central grass lawn, which is large enough to contain a good-sized sports ground, is also well endowed, and has a great future before it. Merrion Square, the residential quarters of the fashionable medical practitioners, is near-by, so that the staff are also lucky in being close to their work. I am sure all the delegates had a most pleasant holiday and are much beholden to the authorities for their kindness and for the admirable arrangements which were made for their comfort.

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## ORIGINAL COMMUNICATIONS.

## THE PRENATAL CARE OF THE INFANT.

BY EDWARD P. DAVIS, M.D.,
Professor of Obstetrics in the Jefferson Medical College of Philadelphia.

While in America at present we are more engaged with the cost of living than the rate of dying, human life is not without value, and the time may come when the nation will be roused to the necessity of safeguarding the natural increase in its population.

Evidently such care must begin with childhood, especially at the period of adolescence in both sexes. Recent efforts to safeguard child labor, to inform boys and girls concerning the dangers of venereal disease, and to provide proper food and hygiene for youth, must be at the foundation of such endeavor. Whatever can be done to warn the young against alcoholism should also be of great value. The giving of a living wage which will permit early marriage, the abolition of tenements, and the substitution of model houses should aid in this endeavor.

That there is room for improvement in the hygiene of child-bearing may be inferred from the statistics given in the recent publication of the United States Government Mortality Statistics of 1908. These show that for each 100,000 of population 1.7 mothers die from the accidents of pregnancy, and 1.3 from the accidents of labor. Still-births are excluded from the vital statistics of this country at present, but of all deaths in 1908 out of a total of 691,574, one-fifth, or 136,432, were under one year of age. In a recent report of the National Conservation Commission, Prof. Irving Fisher of Yale University reported that of

100 premature births 40 were preventable; of 100 children dying of congenital debility 40 might have been saved; of 100 children dying of venereal diseases 70 might have been saved.

The movement to lessen infant mortality throughout the world is of comparatively recent origin. Only in the past decade has England lessened its infant mortality to an appreciable degree. The new science of eugenics has been given its beginning by the recent bequest of Sir Francis Galton of Cambridge. The writings of Ballantyne and his establishment of prenatal wards mark a step in advance in this direction.

Among the potent causes of premature birth and death is direct violence to the mother. Among these, too, are the physical strains to which the poor are subjected in lifting the proverbial coal bucket and in active exercise in domestic work, especially over the wash-tub. Manufacture work by pregnant women in badly ventilated buildings, amid poisonous fumes, and with machinery which constantly racks and jars the operator, is a frequent cause of miscarriage and premature birth.

In domestic matters the building of model houses heated by vapor or hot water from a central plant, and with stationary tubs for laundry work, will greatly lessen the burden of domestic toil. Long and tedious stairways of the old tenements may be replaced by elevators. Laws are being enacted which forbid the employment of pregnant women

in manufacture work under conditions unfavorable to health.

The speed mania of the present day is directly responsible for a considerable proportion of abortion and premature birth. The motor car, to those who ride in it, as well as to those who are knocked down or badly frightened by it, is a frequent cause of abortion. The frightful accidents during the past winter upon the best railroads of the country, and the recent shipwreck, illustrate the dangers of modern locomotion.

While the comfort of the mother suggests that she remain comparatively quiet, the necessity or disregard of ordinary prudence may expose her to injury in modern methods of travel.

Syphilis and alcoholism are recognized as among the great causes of prenatal death. While no method has yet been found to stamp out venereal disease, the campaign of education among the young now in progress, a better knowledge of the diagnosis of syphilis, improved methods of treatment, and more abundant hospital facilities, should lessen the frequency and the severity of syphilis.

In preventing alcoholism, especially among women, the effort so successfully made in Germany to lessen the consumption of strong alcoholic drinks, to place harmless beverages at low prices on sale in all public places, and public education in the dangers of alcoholism and its effect upon the offspring, have been productive of good in other countries and should be equally potent here.

A problem more difficult of solution, but more often brought to the attention of the practicing physician, is the nutrition of a pregnant woman, and especially the avoidance of the toxemia of pregnancy. Among the well-to-do, patients report to their physician for care during pregnancy much earlier than in former years. The nausea and discomfort which mark the toxemia of early gestation cause the patient to speedily apply for relief. Among the poor, overburdened with the necessity for earning a livelihood, and often with the care of other children, these symptoms are disregarded

and the patient frequently does not come under treatment until threatened with eclampsia, when fetal death is inevitable. To avoid such loss of life the general hygiene of the population must receive attention. All maternity hospitals now urge patients applying for confinement to report as often as possible to the clinic during pregnancy. Frequent examinations of the urine are made, and in many maternities as many beds as available are set aside for the treatment of toxemic mothers. The distribution of pure milk at a low price, and instruction in cooking and in general hygiene, all assist in this direction. The establishment of large city markets where the poor can obtain fresh vegetables at low prices directly from the farmer, will materially aid, and the efforts made by our cities to improve the milk supply should be of great value.

Secondary to the toxemia of pregnancy, and often one of its most dangerous consequences, is the anemia from which the poor and pregnant woman often suffers. This is frequently accompanied by dilatation of the heart, valvular disease, or vascular lesions, which may culminate in death from syncope or fatal hemorrhage. In these cases the prematernity ward gives the physician the only opportunity of properly caring for these patients.

Obstetric surgery has its place in the prenatal care of the child. Suppurative foci in the mother should be surgically treated by incision and drainage. In two cases of colon bacillus infection of the right kidney, it has been my privilege to drain the kidney by incision and to see the patient recover and give birth to a living child. In one case of toxemia of pregnancy, resulting in the death of the infant soon after birth from toxemia, a very thorough study of the fetus showed the characteristic lesions of toxemia in the fetal liver and lungs, while the blood swarmed with bacteria. The mother's symptoms left no doubt regarding the existence of a suppurative focus in the biliary passages, probably in a chronic cholecystitis. Operation in this case was refused.

The good results following the prompt removal of the infected appendix in pregnant

women, and the continuation of pregnancy with successful issue, form another illustration of the benefits of obstetric surgery in saving infant life during pregnancy.

The obstetric surgeon may also assist greatly in saving fetal life by restoring to complete health the mother who has lost a pregnancy by abortion. Modern methods of treatment in abortion, which bring about the complete discharge of the decidual membrane with normal involution, prevent subsequent abortion and fetal death. The repair of lacerations of the genital tract and the surgical cure of displacements of the uterus enable a woman who has lost a child to subsequently pass through a successful pregnancy.

An important adjunct in this work consists in the coöperation now given in many of our cities by visiting obstetric nurses and sociological workers. The modern maternity hospital not only cares for its patients in the wards and at the dispensary, but the visiting nurse advises the pregnant women, and by her knowledge of the symptoms of threatened abortion and toxemia will bring her to hospital care in time to save the child. The sociological worker helps in securing employment, relieving the pregnant woman somewhat of the burden of other

children, and brings about the improvements in sanitation necessary for a healthful and successful pregnancy.

It is true that the present time is one in which the burdens of life seem to increase rather than lessen, and in which the degeneration among the rich and the poverty among the poor threaten a decided lessening in the population. But against this must be reckoned the wide-spread interest in the subject of eugenics and the concerted movement now made by many and powerful agencies for the saving of infant life. While the legal value of a life is its wageearning capacity only, and while the little child's life has only a sentimental value, the possibilities in each human life still remain beyond our ken. In this country at least the experience of Jinks's baby should scarcely be duplicated. You will remember how this child, born in a hospital, reared in an almshouse, and graduated from various benevolent institutions, finally came to young manhood only to commit suicide because of the utter burden and futility of his existence.

With eugenics to give the child a fair start, and with the legitimate development of sociology, American democracy should offer a better fate than this.

## WHAT THE OBSTETRICIAN CAN DO TO REDUCE INFANT MORTALITY.1

BY BROOKE M. ANSPACH, M.D., PHILADELPHIA.

The obstetrician can do a great deal to prevent still-birth and the death of children in the earlier weeks of life. His office is largely concerned with prophylaxis. He must exercise it during pregnancy, at the time of labor, and after the baby is born.

The health of the infant is directly influenced by the health of the mother; as the sound body favors the sound mind, so the healthy woman begets the healthy child.

A few facts gathered from the vital statistics of Philadelphia may be of interest. The average number of the still-born in Philadelphia per year is 1917—that is,

<sup>1</sup>Presented to the South Branch of the Philadelphia County Medical Society, April 26, 1912.

about one child in every twenty is born

The mortality among infants during the first year of life is 19.4 per cent of the total mortality of all ages and from all diseases. In 1910 there were 26,879 deaths from all causes and including every age; 5232 of these deaths were of infants under one year; in addition there were 2026 still-births, and, it is estimated, 10,000 miscarriages. The commonest cause of death during the first three months of life is prematurity; other causes are congenital debility, malformations, and birth injuries.

The principal dangers to the product of conception during pregnancy are those

toxemias—pernicious vomiting, eclampsia, acute yellow atrophy—of which we all know only too well, and sometimes only too painfully. Over the general diseases accidentally acquired and not closely identified with pregnancy the doctor has no control (and these we need not discuss), but the toxic disorders of pregnancy too often are the result of insufficient attention on the part of the practitioner.

It takes considerable trouble to watch closely the emunctories of the pregnant The eclamptic state often arises without any warning, like a thunderbolt out of a clear sky. Nothing but systematic repeated examinations and attention throughout pregnancy will guard against it. Although one may urge that in many instances the lay mind is not alive to the importance of this attention, and will not recompense the physician adequately for it, that doctor will do well who observes every precaution, no matter what the fee; because a serious toxemia will give him far more trouble than he would be obliged to take in order to guard against it. An ounce of prevention here, truly, is worth a pound of cure.

It is hardly necessary to detail the watchfulness required to detect the early dangersignals of a serious toxemia, nor to mention the measures which may be taken to stimulate the emunctories of the pregnant woman so that there will be no accumulations of metabolic poisons within her. Nevertheless, I wish to lay emphasis upon the great importance of securing each day a free evacuation of the bowels, the necessity of examining the urine at frequent intervals, and the importance of the information that may be obtained by taking the bloodpressure throughout the course of pregnancy. Even a small amount of albumin in the urine may be of serious significance, and should never be treated lightly. steady rise in blood-pressure is a momentous indication; headache, disturbed vision, and unusual nervous symptoms must always put the careful obstetrician on his guard.

It may not be out of place at this point

to say a word concerning the prevention of miscarriage. One of the commonest causes of this occurrence during the early months of pregnancy, in women who consider themselves and are otherwise in good condition, is displacement of the uterus. Every pregnant woman should be examined in the early months to see if the uterus is in good position; backache or urinary and rectal difficulties make this examination doubly imperative.

Possibly the most important office of the obstetrician is the conduct of labor. It is a distressing thing to deliver a woman of a still-born child, and especially so if, up to the time of labor, the family have believed that all was well and that they might hope for a healthy baby. Too often, I fear, such a disappointment may be traced to insufficient examination of the patient before she falls into labor.

I do not know how customary it is for the general practitioner to practice pelvimetry, but no one will deny that every primipara should be carefully measured, so that the size of her pelvis is known by the end of the seventh month of gestation. These measurements at first need be only those obtained by external methods, the most important being the external conjugate, which indicates the size of the pelvic inlet, and the bi-ischial, which indicates the size of the pelvic outlet.

If the external conjugate falls below 19, an internal examination should be made about a month before term, to get the true conjugate and to see whether the fetal head can be made to enter the pelvic canal. If the difficulty of measuring the internal conjugate is great on account of rigidity and tenderness, and if there seems to be a disproportion between the size of the head and the pelvic inlet, an anesthetic may be given in order to settle this important question. The relative proportions of the fetal head and the pelvic inlet are possibly the best index of the probable course of labor in moderate degrees of contraction.

If there appears to be any great disproportion, the treatment of the pregnant woman enters the domain of surgical obstetrics, and she will require either the induction of labor two or three weeks before term, or some surgical obstetrical procedure which I need not detail.

Another very important diameter of the pelvis which is infrequently taken is that of the pelvic outlet, the estimation of the angle of the pubic arch, and the space between the tuberosities of the ischia and the sacrum. A woman sometimes will progress in labor normally until near the end; the head will appear at the vulvar outlet, and then labor may be indefinitely delayed, all because the infrapubic angle is small and the distance between the tuberosities greatly diminished. Sixty per cent of contracted pelves in white women are funnel pelves.

When the transverse diameter at the first examination is found to be less than 10 centimeters, the posterior sagittal diameter of Klien should be at once taken in order to see what the prospects are for an easy delivery. It has been found that the ordinary dorsal position, with the thighs flexed sharply upon the abdomen, will widen the pelvic outlet, just as the Walcher position increases the internal conjugate.

Difficult labor is by no means limited to contracted pelves. Faulty position also plays a considerable part. The position of the baby should be determined before the onset of labor. Forewarned is forearmed. and if the doctor knows beforehand that the child is presenting by the breech, or that the occiput is posterior, he can take steps accordingly, which will conserve the interests of the patient and reduce infant mor-In multiparæ, external manipulation will often convert the breech into a In primiparæ, external version may be unsuccessful, but then the practitioner may adopt the plan of safety in such cases, viz., respond quickly to the summons, watch the patient very carefully until the breech is born, and then have suitable help at hand to deliver the patient rapidly and aseptically.

In the delivery of the after-coming head I have found the use of the forceps very valuable. It is my custom, if the aftercoming head is not immediately delivered by the use of Mauriceau's method, to immediately apply forceps, and I have never been unsuccessful in securing speedy delivery in this way. If the doctor is unaware of a breech position, he may be unprepared for the rapid delivery, which is often necessary, and although it may be urged that breech positions are usually slow, and there is generally sufficient time to secure competent help, it is desirable to avoid, at any time, any undue haste in the preparation for such obstetric maneuver as may be necessary, and it is desirable to warn the family beforehand of the unusual danger to the child.

The attitude that should be taken in the conduct of an obstetric case from the stand-point of interference or non-interference should be that as long as the membranes have not ruptured, and the os is not fully dilated, the patient may be regarded with equanimity. She may be very tired and restless as the result of painful but inefficient uterine contractions, but much comfort may be obtained by the administration of a hypodermic of morphine and by a period of complete rest.

No time need be spent in speaking of the avoidance of infection during labor, for it is only too evident that an infection of the mother may be of serious import to the child. The prevention of excessive hemorrhage in the third stage of labor is of great importance, because in controlling it there is great opportunity for infection, and a serious hemorrhage may interfere with the milk supply.

The first great danger to which the new baby is exposed is hemorrhage from an improperly secured unbilical stump, and the second is infection of the umbilicus. To guard against the first, tape should be preferred to silk, as it is less likely to cut the vessels. To avoid the second, careful asepsis should be observed in tying and dividing the cord, and the stump should be immediately protected by a sterile cotton compress.

The next problem in the conservation of the infant life is that of nursing. Few mothers will refuse to nurse their children if they are told that it is greatly to the advantage of the infant to be raised on mother's milk. Possibly the higher we go in the scale of intelligence, and surely the higher we go in the scale of womanly instincts, the more readily do we find that our patients acquiesce. I remember no case in which a woman absolutely refused to try to nurse her baby, and breast nursing was only discontinued in those in which the child did not thrive upon breast milk.

I think the inability of the mother to nurse her child sometimes does depend upon the woman's intense desire to avoid breast feedings, and under these circumstances nothing the doctor can do may be of any avail.

The other difficulties which the obstetrician encounters are poorly developed and tender nipples, or fissures, to say nothing of the more serious breast infections. First of all, it should be remembered that both the baby and the mother must be taught how to nurse, and that although during the first week nursing is painful, unsatisfactory, and difficult for both mother and infant, gentle persistence will transform it into a satisfactory, painless, and even pleasurable process.

The nipples, before confinement, should be carefully cleansed with soap and water about once a week, and every night a lotion of borax in equal parts of alcohol and water should be applied. When nursing is begun the nipples should be anointed after each nursing, with some sterile ointment. Fissures should be looked for if the nipples are tender, and may often be detected by the application of alcohol. The moment a fissure is discovered, it should be touched with a solution of nitrate of silver, and a nipple shield should invariably be used.

Breast massage is not often necessary, although when the breasts are very hard and caked it may be of considerable advantage if applied gently and if the rubbing is always made in the direction of the nipple. The breast pump may be useful if applied gently and aseptically. The fulness of the breasts can be influenced largely by the diet, reducing the liquid constituent

when the breasts are congested, and increasing it when they are flabby and soft. The use of saline purgatives will help to reduce congestion of the breasts, while enveloping them in hot compresses with a breast bandage will give more comfort than anything else.

There is hardly any drug or combination of drugs which may be used as specifics to increase the milk supply. The latter depends upon the general health of the mother and her mammary development, so that outside of general tonics and a nutritious diet, with plenty of water and milk, there is little to be advised. When the breast supply is scanty, but there is hope of increasing it, there is no objection to the use of condensed milk, or modified milk, as an auxiliary food.

It is a mistake for the mother to think that bottle feeding is much less troublesome than breast feeding. If the proper care is taken in the preparation of the milk mixture, in its refrigeration and subsequent heating before use, and in sterilization of the bottles and of the nipples, it is just as much trouble and considerably more expensive. If this is explained to the mother, very few will prefer bottle nursing to breast nursing from the standpoint of the labor involved.

Although a very large percentage of infant mortality may be traced to improper feeding during the first year of life, I do not for one moment believe that this mortality would occur in bottle-fed infants if the artificial feedings were given in the approved form.

It goes without saying that if the cow's milk is impure, if the mixture is improperly selected, if the bottles and nipples are ill kept, the danger is great; but when good milk is obtained, when the proper formula is used, and when all the care that is required is taken, there will be few fatalities in the bottle feeding of infants. I am convinced that if after a conscientious trial of three or four weeks the breast-fed baby does not gain, it should be weaned and put on the bottle.

## MANAGEMENT OF LABOR, WITH SPECIAL CONSIDERATION OF THE PRESER-VATION OF THE CHILD'S LIFE.

BY RICHARD C. NORRIS, A.M., M.D., Physician in Charge of the Preston Retreat of Philadelphia.

The conduct of labor in such manner as to save as many babies as possible involves practically the entire field of obstetrics. The part assigned to me in this symposium presupposes that the expectant mother has been carefully studied during pregnancy and that a definite plan for the conduct of her labor has been prearranged. The probability of an obstructed labor from any mechanical obstacle, from faulty position and presentation, the condition of the soft tissues of the birth canal, and finally the patient's equipment for labor learned from the studies of her metabolism, of her muscular energy and of her nerve reserve force, all predict to the experienced obstetrician greater or less difficulty as the case may be. Generally speaking, the conduct of labor, with the mother's best interests in view, will be also for the child's best interests, but as we shall see later, accidents and even foreseen complications not infrequently occur, in which these interests are placed in the balance. When this does occur, there are many factors to influence the results.

The Anglo-Saxon feeling that the mother's interests are paramount, religious belief, the personal equation of the attendant and his obstetric judgment and skill, the presence or absence of proper environment for major obstetric operations, and other factors, do and always will influence the saving or loss of infantile life.

During the year 1911 in round numbers there were 40,000 reported births in Philadelphia; 2131 still-births at term occurred; 559 premature babies were still-born; approximately 9000 miscarriages occurred (estimated). Graphically stated, a baby was born every thirteen minutes, a baby was lost before birth every forty minutes, and a still-birth at term occurred every four hours.

This is indeed an alarming mortality and shows how undaunted nature is in her efforts to perpetuate the race. Is this mortality hopeless? Can improved obstetric

methods and a wider knowledge of modern obstetrics prevent this death-rate? I think so. Practitioners of medicine must abandon "wait for nature" methods and must learn how safely to interfere in the child's interests. The midwife must be properly trained and restricted, or wholly eliminated, and her clientele sent to the hospitals. There is no middle ground. Either better obstetrics must come or the high still-birth record must continue.

It has interested me to study and compare the city's records with my own at the Preston Retreat—a well-equipped maternity. For this purpose I have studied the last 1000 cases (actually 1112) and I find the premature still-born death-rate practically the same (1.5 per cent) as that of the city (1.4 per cent). The still-born death-rate (2.4 per cent) at term, however, is less than one-half that of the city's still-born term death-rate—5.3 per cent.

PRESTON RETREAT—1112 CONSECUTIVE DE-LIVERIES.

	No. of	Still- births.	Causes of death.
Forceps: High	85	5	1 prolapsed cord; 2 ec- lamptic mothers; 1 pre- mature, maternal hear
Low	56	7	disease; 1 compression. 2 prolapsed cord; 1 macerated; 1 acute hydramnios (5th month); 8 com-
Breech	36	4	pression; delayed use of forceps in 2. 2 prolapsed cord; 1 mac- erated; 1 died after 48
Version	4	2	hours (compression). 1 prolapsed cord; 1 pla
Pubiotomy Cæsarian section.	8 9	0	centa previa (central).
Total	143	18	

Four infants' deaths due to operative delivery in 143 operative cases. Labor was induced 39 times.

	Births (1911).	Premature still-births.	Still-births at term.
City of Philadelphia Preston Retreat Per cent mortality:	39,975 1,112	559 17	2,181 27
City of Philadelphia Preston Retreat		1.4 1.5	5.8 2.4

While the Retreat's clientele certainly does not represent a large emergency work,

being a hospital, it naturally receives more cases in which the child's life is jeopardized by grave obstetric situations than are to be found in the average obstetric work.

In this group of more than 1000 consecutive cases, 143 obstetric operations were thought necessary, as follows: 35 high forceps; 56 low forceps; 36 breech extractions; 4 versions; 3 pubiotomies; 9 Cæsarian sections. Eighteen babies were still-born, and these deaths as analyzed in the table show that only four were lost through operative obstetrics. To state the matter in another way, of the 143 operations 14 babies were lost from diseases and accidents such as eclampsia (2 cases); central placenta previa (1 case); maternal valvular disease of the heart (1 case); prolapsed cord (6 cases); and diseases of the fetus (4 cases). One hundred and twenty-five babies were saved. Of the remaining 969 babies born without operative aid (excepting such tried measures as castor oil, quinine, bougie or dilating bag to bring on labor), only nine were lost at birth. Labor was induced 39 times in 1116 cases.

Statistics are tiresome details, except to those who are fond of playing with puzzles, and unless some practical knowledge can be derived from them to benefit oneself and others they are useless. Analyzing my work with this end in view, I find that the causes of infant mortality have been about as follows:

Pelvic narrowing and relative disproportion between head and pelvis has been the cause of infantile death in 20 per cent; unfavorable presentation and abnormal mechanism in 8 per cent; disease or deformity of the fetus in 7 per cent; an undilated birth canal, usually associated with some complication requiring, for the safety of the child, a rapid delivery, 65 per cent.

Seitz (Münch. med. Wochensch., Jan. 18, 1910) found, in 50,000 labors in the Munich clinic, that 65 per cent of still-births were due to obstruction by the cervix, 35 per cent directly and 30 per cent to accidents or diseases occurring with an undilated birth canal. It is certainly true, in my experience, that in the problems of saving infant life correct knowledge of dealing

with the soft tissues of the birth canal in normal and complicated labors is three times as important as a knowledge of Cæsarian section, pubiotomy, or high forceps. Add to this control of the soft tissues, skill and obstetric judgment in dealing with abnormal mechanisms of labor, and the saving of infant life during labor is tremendously increased. That means that better knowledge of what may be termed minor obstetric surgery is needed we are to save more babies during birth. The prevention of prolongation of pregnancy and of unduly prolonged labor, the obstetric methods of treating a rigid or partially dilated cervix and vagina, the manual or instrumental means of correcting abnormal mechanism, and the skilled use of forceps, must be better understood and more generally practiced. To do all these with safety to the mother obstetricians must be well-trained surgeons. The average doctor must realize that just as he no longer attempts to operate within the body cavities without special training, so he must abandon obstetric practice unless trained to this branch of surgery.

An entire evening could well be given to discussion of any one of the topics just mentioned. With the few minutes at my disposal it will be best to crystallize from my experience a few axioms of practice that might appropriately be called "baby-saving obstetrics."

Prolongation of Pregnancy.—An infant gains one-third of its birth weight during the last month of pregnancy. The disadvantages of overgrowth of the fetus with well-ossified head, the added risk of premature detachment of the placenta, the increased labor energy required—all justify the induction of labor to prevent a prolonged pregnancy. With the head floating above the brim of the pelvis, in primipara, and especially if the position is posterior or when a previous labor has been difficult, induction of labor is a life-saving measure for the infant and is of undoubted assistance to the mother. Where relative disproportion does not exist and the head is not in the pelvic cavity, pregnancy should not in primiparæ be permitted to continue more

than ten days beyond calculated term. In many cases even this degree of prolongation is unwarranted. After viability of the fetus the induction of labor for toxemia is life-saving for the infant as well as for the mother.

Prolonged Labor.—An unduly prolonged labor during the first or second stages, or a sudden accident, such as hemorrhage, convulsion, or prolapsed cord, at any stage is a common cause of fetal death during labor. To save the infant under the varying conditions that may be present and not put in jeopardy the mother require knowledge and skill and sound obstetric judgment.

Of all the signs of impending danger to the infant, slowing of the heart sounds is most important. Rapid or irregular heart sounds, violent movements of the fetus, followed by cessation, are all suggestive; but slowing of the heart-beat is most trust-Throughout a protracted labor worthy. the heart sounds should be noted every halfhour. An unduly rigid or edematous cervix, so often seen in primiparæ whose sexual organs and nervous systems are characterized by hypoplasia, is a risk to the child's life in the first stage of labor, for in these cases the nagging pains inhibit uterine contraction, prolong labor for hours, and exhaust the patients. These cases with infantile types of cervix and vagina, and with deficient nerve force and resistance, frequently lose their first babies because prompt aid is not rendered them. differ from the other types of rigid cervix in strong, healthy women, with or without the cicatrices of former lacerations, in that anodyne drugs such as morphine, chloral, or scopolamine are not to be employed. Complete anesthesia with surgical means is necessary to open the birth canal-bags, manual, or in extreme cases incisions are better chosen-for this class of cases require assistance from start to finish both for their own and for their babies' sakes.

While I am sure that nature protects the unborn child from narcotic drugs given to the mother during labor, it is my practice never to give more than 1/4 grain of morphine with 30 grains of chloral as the maximum dose throughout the entire first

stage of labor, and often less is given. The danger to the child is a real one from large doses of scopolamine or any narcotic drug given in sufficient amount to make the patient unconscious of her suffering; and even ether, which is safest of all, can be the cause of death of the fetus.

Rupture of the bag of waters in primiparæ in the first stage of labor (except it be in eclampsia) is an obstetric crime. In a multipara when the os is two-thirds dilated it is often an obstetric blessing. Prolonged labor due to an overdistended bladder is evidence of an inefficient nurse. No one can hope to manage successfully for the child a prolonged labor without knowledge of the mechanism in progress and of the means to correct it when it becomes abnormal. Incomplete flexion in occiput posterior positions, at the pelvic brim or on the pelvic floor, or posterior rotation, must be recognized and appropriately treated. Face presentation must be recognized and an anterior position of the chin secured early in the labor. Transverse presentation, twins, breech—any deviation must be known early in the labor, before, indeed, the diagnosis of prolonged labor can be made, for each abnormality of presentation requires its own time, and a prolonged labor is not to be measured by hours only.

It is impossible to discuss baby-saving obstetrics without paying a tribute to the obstetric forceps. The time has come when its usefulness is disappearing for serious bony obstruction to labor, while its field is enlarged for assisting labor after preparing the soft tissues of the canal for a delivery expeditious for the mother and life-saving for the child. In a word, difficult high forceps deliveries represent an era rapidly becoming historic. Axis traction deliveries of fixed and well-molded heads will always be a triumph of obstetric art.

In conclusion let me say that the most important of recent obstetric advances—those dealing with the soft tissues of the birth canal—have contributed much to the saving of infant life. When an obstetric emergency arises, endangering either the

mother or the child, the obstetric world is declaring that means are at hand safely to open the soft canal in order to avert danger to both. Conflicting opinions there are, to be sure! It is my judgment that these means should be properly safeguarded, and I would offer the following summary of their efficiency and danger:

Bag dilatation is available to the average obstetrician, especially for use in the home when immediate delivery is not required.

Manual dilatation will meet most emergencies when the cervix is effaced and the external os is the only obstacle.

Mechanical dilators are dangerous. They

may be used to begin dilatation in some urgent cases.

Vaginal hysterotomy is the most rapid and most efficient, but requires always a skilled vaginal surgeon and hospital environment.

Abdominal section is to be preferred when cicatricial contraction or anatomical defects are extreme.

The surgeon skilled in the use of forceps, with a practical knowledge of mechanism and of when and how to safely open the cervix and vagina, is the obstetrician likely to save the largest proportion of babies during labor.

## THE MODERN CONCEPTION OF GOUT AND ITS LATEST TREATMENT.

BY H. A. BOSMA, M.D., NEW YORK.

Although Wollaston saw some relation between gout and uric acid, and Garrod in 1848 proved that there was an increase of uric acid in the blood of gouty patients, it is only of very recent date that we know something more definite about the pathogenesis of arthritis urica.

It was Emil Fisher who taught us that the source of uric acid is not albumin, as was generally believed, but he demonstrated that it is derived from nuclein, the main constituent of the cell nuclei.

In uric acid formation we have the very striking example of the action of a succession of enzymes. The first of these is called nucleose, which liberates from nuclein the two purin bases, named adenine and guanine. The next to come into play are certain deamidizing enzymes; one of these, called adenose, converts adenine into hypoxanthine, and another called guanose converts guanine into xanthine. Finally oxidoses step in, which convert hypoxanthin into xanthine and xanthine into uric acid. In some organs, especially the liver, there is a capacity to destroy uric acid after it is formed, and so we are protected from a too great accumulation of this substance.

The enzyme responsible for uric acid destruction is called the uricolytic enzyme. The uric acid which ultimately escapes as

urates in the urine is the undestroyed residue. Now, Brugsch and Schittenhelm have shown that the essential factor in gout is a disturbance in the nuclein metabolism, brought about by some defect in the entire fermentative apparatus, producing a constant presence of uric acid in the venous blood.

There is no gout without a uricemia as precursor, yet there are uricemias that do not produce gout. In leukemia, for instance, there is a considerable increase of uric acid in the blood. There is sometimes far more than we find in gout, yet the sufferer from leukemia has no gouty attacks, and no tophic formation takes place.

When a healthy normal person is fed on a purin-containing diet, uric acid develops in his blood; a gouty subject, however, has uric acid in his blood when being fed on a diet entirely free of purins. In his case it is derived from the nuclein of his own body cells.

Whether these disturbances in the action of the ferments are primary or associated with or dependent on other regulators in the body, like the nervous system, is not known.

Another observation of recent date is that the uric acid in the blood is mononatrium urate held in solution. The blood of a gouty person is not oversaturated with uric acid, nor is its alkalinity decreased—in fact it often is increased.

The mononatrium urate thrown out of solution sets up inflammatory processes in the joints; Van Loghem thinks that it is mechanical irritation that causes the inflammation. What then causes urates to be deposited in the joints? Experiments by Van Loghem and Silbergleit have shown that an increase of sodium in the body fluids decreases the solubility of the mononatrium urate, and they strengthen the views of Falkenstein, who empirically found beneficial effects from the ingestion of hydrochloric acid. Umber thinks that in gouty subjects the affinity of the tissues for uric acid is increased, and he refers to the great absorbent power of cartilage for uric acid.

From this résumé it will be seen that in the pathogenesis of gout there are still problems for further study, yet we do know that the essential factor is a constant uricemia, in many cases brought about by an anomaly in the nuclein metabolism, but not exclusively so. We may also have a uricemia in the wake of sclerosed kidneys in the stage of decompensation with all the clinical symptoms of gout resulting therefrom.

Our therapeutic measures are the logical deductions from what we at present know about the pathogenesis of gout:

- 1. Restrict purin-containing food.
- 2. Accelerate the excretion of uric acid by way of the kidneys and intestines.
  - 3. Increase the solubility of the urates.
  - 4. Promote oxidation of uric acid.

About the last point a few words: Lowenthal's experiments with radium on ferments led Gudzent to investigate the influence of radium on the disturbances in nuclein metabolism, caused by a deficient action of ferments. It was shown that in vitro radium emanation dissolves and destroys mononatrium urate, and further that it does the same thing in the human body. Gouty patients after a prolonged treatment with radium emanation, whether taken in water or by inhalation, lose their uricemia and they metabolize easily purin-containing food. This is a fact of great importance. According to Gudzent this is due to activa-

tion of enzymes that had become inactive, chiefly of the uricolytic ferment. beautiful researches have paved the way for a more radical cure of gout and other diseases of metabolism, and they also have thrown a new light on the empirical fact that many constitutional diseases are greatly benefited by taking the waters in watering-places here and abroad. They explain why, for instance, at Postyen in Hungaria, the mud, so highly charged with radium emanation, has, according to the London Practitioner, an unusually beneficial effect on rheumatic and gouty conditions and in the removal of chronic exudations, especially those around joints and tendons.

Through the work of the Curies, therefore, in bringing radium and its activities to the attention of scientists, we are apparently on the threshold of a better understanding of the actual meaning of many wonder cures reported from various bath resorts which hitherto excited a certain amount of skepticism through the lack of a satisfactory scientific explanation.

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#### HYDROPHOBIA OR RABIES.

CUMMING in the Journal of the American Medical Association of May 18, 1912, tells us that the cauterization of a bite is recognized as the first and most important measure in dealing with this disease. The free use of fuming nitric acid is a satisfactory method of cauterization. penetration of the acid makes it a valuable cauterization agent, but even when this procedure is carried out, about 10 per cent of the experimental animals die. It is advisable, after sufficient application of the acid, to wash the wound freely with sterile physiologic salt solution, thus removing the acid and preventing unnecessary destruction of tissue. If nitric acid is not to be

had, full-strength phenol (carbolic acid) may be used.

It is, however, eminently important that this cauterizing agent be washed from the wound by the free use of absolute alcohol. This procedure prevents subsequent ulceration, which is so common when the alcohol wash is neglected.

These two agents, nitric acid and phenol, destroy the virus by virtue of their cauterizing action; yet in high dilutions neither has a disinfectant action on the virus. In fact, a one-per-cent solution of carbolic acid is an excellent preservative for this particular virus; for instance, an emulsion of rabic brain made up in a one-per-cent phenol solution, or any one of its numerous derivatives, will preserve the virulence for several weeks.

In formaldehyde solution, on the other hand, we have a specific disinfectant for this virus. The specificity of the antiferment action of formaldehyde on rabies virus is easily demonstrated by laboratory experiments. Formaldehyde in as high a dilution as 0.025 per cent will destroy the virus in a short time. In the treatment of wounds inflicted by rabid dogs the use of a 5-per-cent formaldehyde solution applied to the wound for twelve hours is preferable to the cauterizing action of nitric acid or phenol because of the specific disinfectant and penetrating action of the former.

Especially should this preliminary preventive measure be instituted in severe lacerating wounds, for in such wounds the degree of infection is high. The immediate treatment of a wound gives the best results; nevertheless, treatment should not be neglected even after the lapse of a couple of days; moreover, under the latter condition the wound should be opened and thoroughly scrubbed. If every wound, especially severe ones on the head, be thoroughly cauterized, and this immediately followed by antirabic treatment, the mortality would be nil among those bitten.

As to the time of exposure, it can reasonably be said that a wound on the hand after a delay of three weeks is quite as dangerous as a bite on the head exposed

only a few days. The cumulative action and the extension of the virus along the nerve trunks to the central nervous system during the interval of exposure should be always borne in mind. Therefore it is quite as necessary to prescribe an extensive form of treatment to a patient bitten slightly on the extremities with a prolonged exposure as it is to one with a recent head wound.

It is quite safe to say that the virus is not transmitted by the bite of a rabid animal until two days previous to the appear-The early ance of the first symptoms. symptoms, however, are often very obscure and so slight that they are not recognized. So it is with some difficulty that a decision is reached in advising patients bitten early in the course of the disease to take treatment. If a dog which is naturally not of a vicious kind suddenly bites without provocation, it should be tied securely and kept under close observation for at least seven days. Should the dog develop symptoms of rabies during its confinement the bite should be considered dangerous. An investigation of such a case will usually reveal the fact that the external cause inciting the dog to bite was not sufficient to cause the same act in this dog when normal. Occasionally the only recognized symptom in the early stage is a tendency to bite, but such cases, if kept under observation, develop well-defined symptoms within a few days.

Physicians should not fail to recognize the difference between a dog which bites because it is vicious and one which is in the early stages of rabies. In either case the dog should not be killed, but confined and kept under observation for seven days. If simply vicious it remains well and healthy. If, on the contrary, it is rabid it will develop either the maniacal or paralytic form of the disease and die within a few days. On the other hand, if the dog is shot in the first stages of the disease, a satisfactory laboratory diagnosis may be difficult and delayed a longer time than is required for the development of the characteristic symptoms in the dog.

## EDITORIAL.

#### GASTRIC AND DUODENAL ULCER.

It is not many years since duodenal ulcer was an almost unknown quantity in the consideration of abdominal lesions, but with the investigations made by abdominal surgeons in the course of their work it has become evident that it occurs far more frequently than has hitherto been believed, and some surgeons have gone so far as to assert that, as a matter of fact, it occurs more frequently than does gastric ulcer. That this is a fact cannot be accepted. The proportion is probably 5 to 1. The important point to remember is that duodenal ulcer is always to be considered when the diagnosis of gastric ulcer is being made. Many of the patients that have been supposed to be suffering from gastric ulcer have been found on the operating table to be free of this lesion, and Moynihan in the British Medical Journal of February 17, 1912, states that even in cases in which the study of the case had been most circumspect, before a diagnosis of gastric ulcer was reached, the operator nevertheless has found not the slightest evidence of structural disease, and this holds true not of one case but of many cases. There are cases in which bloody vomiting takes place without any ulceration, apparently as the result of some degenerative change in the superficial vessels of the gastric mucosa.

That an ulcer once developed remains superficial for any length of time is probably untrue. Moynihan believes that any ulcer which has existed for a length of time involves practically all the coats of the stomach in its ravages, and while his opinion may be exaggerated, in that the cases he sees are far advanced when they come to surgical interference, nevertheless his experience is of value in impressing upon us the persistency and chronicity of this disease. It is also to be remembered that in many patients who are supposed to have gastric ulcer the lesion is not in the stomach

at all, but in some other part of the abdominal cavity, as an adherent or obstructed appendix, or tuberculous ulceration of the ileum and cecum, stones in the gall-bladder, or obstruction of the stomach. Moynihan evidently has not much confidence in Lane's belief that a kink in the ileum is also a cause of such symptoms; but he goes so far as to state that in his own experience the commonest site of gastric ulcer is in the right iliac fossa. In other words, it is really appendicitis.

The points which Moynihan thinks are most important for the diagnosis of gastric ulcer are as follows: When the ulcer is situated on the lesser curvature, pain follows upon the ingestion of food after a definite interval, which is usually about half an hour or an hour. It is felt chiefly in the middle line and to the left, and if the hand is placed vertically on the epigastrium with the fingers toward the chest, to the left of the middle line, and the patient takes a deep breath as pressure is made by the physician's hand, sharp pain will be felt. If the ulcer is on the posterior surface of the stomach pain in the back may be very severe and constant, is apt to be gnawing in character, and the x-ray may reveal what is apparently an hour-glass stomach, but which in reality is due to spasm of the circular fibers.

Because of his surgical experience Moynihan has not much confidence in the medicinal measures which have been used in this disease, and he seems to be particularly opposed to Lenhartz's feeding method, although he admits that a strict diet may be beneficial to all parts of the alimentary canal. Moynihan also takes issue with the view that gall-stones are often quiescent and produce no symptoms. He believes that in the vast majority of instances they do produce symptoms, but that these symptoms are said to be manifestations of various forms of dyspepsia and other forms of abdominal disorder.

### INTRASPINAL ANESTHESIA

From time to time in the editorial pages of the THERAPEUTIC GAZETTE, during the last ten or fifteen years, we have drawn attention to facts concerning the production of surgical anesthesia by means of intraspinal injections of various substances, our conclusion in every instance being that while it was entirely possible to produce anesthesia in this manner the dangers and difficulties connected with it are far outweighed by any advantages which it may possess. In the March issue of the London Practitioner McGavin and O'Leary call attention to the fact that in 1909 one of them published a series of 250 cases of operation under spinal anesthesia, a stovaine-glucose solution being employed, these cases being added to a series of fifty previously published. They now make a report upon five hundred operations performed under the influence of this combination of substances given intraspinally, and notwithstanding the frank statements which they make concerning evil effects they are still enthusiastic as to its use, advising that it should be employed not only in hospital but in private practice to a much greater extent than at present. One of the advantages is the great saving of time, labor, and discomfort to the patient, and to use their words, "the bill for anesthetics in the hospital was sensibly reduced." Barring the saving of discomfort to the patient, we do not see that any of the other advantages should possess much weight in the consideration of this matter. They also advocate the use of a second injection when the first fails.

They state that only in cases of high operation, in which the possibility of the assistance of general anesthesia has had to be entertained, has food been withheld before the operation, and it is interesting to note that it has been their practice in the more recent cases to give an injection of pituitrin an hour before operation when inducing analgesia at a high level, their object being the combating of the slight but obvious fall of blood-pressure which at times occurs about ten minutes after the injection of the anesthetic as the result of the vasodilator property of stovaine. This fall of pressure,

they freely admit, is at times associated with pallor, sweating, and nausea, and occasionally vomiting, but the pituitrin seems to put these symptoms aside or prevent them.

The site of the puncture, they state, may be in any one of the four lumbar interspaces, or in the dorsi-lumbar interspace. the latter giving more certain results and being used where abdominal or pelvic operations are required. The dose consists of from four to six centigrammes of the ordinary stovaine-glucose solution. After the injection has been made the patient is left quiet for a minute, then turned gently on the back, placed slightly in the Trendelenburg posture, and the steady rise of analgesia is closely tested by the pricking of a pin. As soon as the analgesia has reached high enough, the table is leveled, the seat of the operation is screened from the patient's view, and the operation proceeds. The second injections when given should not be more than one-half the original dose, and are employed when the analgesia is insufficient or of too brief duration. McGavin and O'Leary do not seem to think that these second injections increase the danger to the patient, and assert that the second injection can usually be given with ease during the operation. It is interesting to note, too, that they claim that patients who have been operated on once in this manner have, on needing a second operation, asked for it, or actually made it a condition of their undergoing operation.

McGavin and O'Leary frankly give us the disagreeable symptoms which they have met with. It is not possible in the brief space which we have to deal with these exhaustively. Aside from the evidences of vasodilatation already spoken of, they tell us that vomiting has been induced occasionally, either shortly after injection, during operation, or as a postoperative effect, in some instances as early as ten minutes after the injection, in other instances as late as five hours after operation. As a matter of fact the number of cases of vomiting in their series amounted to five per cent. In regard to rigors the occurrence was eight per cent, but the rigors are usually unaccompanied by any marked pyrexia.

On the other hand, the occurrence of some pyrexia is by no means unusual. Indeed, it is so frequent that they speak of it as a more or less normal consequence of spinal injection usually inseparable from the method in question. The average temperature has been 100.5° F., and no less than 327 of the 500 cases showed pyrexia, although there was no sepsis to act as an additional cause. They apparently believe that the febrile movement is due to some irritation of the thermogenic centers. Headache occurred in only 32 of their cases, or 6.4 per cent, and in only one of them was it severe and persistent, although many other observers have concluded that headache was an exceedingly common and often severe symptom. Backache occurred in 0.8 per cent; dimness of vision in 0.4 per cent. Only one case of syncope occurred, with no bad aftereffects. In two cases a typical epileptic fit occurred during the operation. One patient was a woman who suffered from varicose veins, the convulsions being limited to the head, neck, and upper extremities. In the second case, one of prostatectomy, the convulsions came on five minutes after injection, but it is only fair to state that both of these patients were subject to these convulsive seizures. Albuminuria occurred in 0.6 per cent, retention of urine in 0.4 per cent. and priapism occasionally. Amongst the postoperative complications four cases had lobar pneumonia and one acute bronchitis. The death-rate in the present series was 16 deaths, or 3.2 per cent. The authors claim that none of these results can be attributed to the effects of the method, and give a table to support their view.

Finally, McGavin and O'Leary state that most writers have considered that infancy, old age, syphilis, gangrene, locomotor ataxia, sepsis, diabetes, and atheroma are all contraindications to this method, but with the exception of infancy they disregard all of them and report a case of a man seventy-two years of age, afflicted with double aortic disease and marked atheroma, diabetic gangrene, and chronic bronchitis, who recovered completely after amputation through the thigh when intraspinal injection was resorted to.

We must admit that the report of Mc-Gavin and O'Leary is considerably more favorable than the majority of its predecessors, but we think it evident that the disagreeable effects which they have noted are all of them of sufficient importance to make the ordinary practitioner hesitate before he resorts to this plan except in very extraordinary instances.

In the British Medical Journal of March 16, 1912, no less a surgeon than Mr. Barker, of University College Hospital, makes a report upon his experience with spinal analgesia, basing his remarks upon 2354 cases, and stating that every effort has been made to secure uniformity of method in compiling the results. Some of these cases evidently are identical with those included in Mc-Gavin's and O'Leary's paper to which we have just referred. Barker believes that the specific gravity of the fluid suspending the drug is an important factor in its influence in the dural canal. The injection fluid consists of stovaine 5 parts, glucose 5 parts, and distilled water 90 parts, all by weight. This solution is, he claims, practically isotonic with the blood and has a specific gravity of 1023 against that of the cerebrospinal fluid, which is 1007. Its high specific gravity tends to make it remain in the lower portions of the cord, and the nerve-roots are therefore immersed in the heavy analgesic fluid, which does not readily go elsewhere. The average dose given has been one cubic centimeter of this solution. He has recently been having the solution put up in ampoules as a convenient way of preserving it and keeping it sterile. Each ampoule holds nearly double the required amount, to allow of loss in filling the syringe and permit the dislodging of air bubbles. The exact dose must always be measured in the syringe and in no other way.

Barker also insists that the operator must in every case strike the dural sac exactly in the middle line. He believes, from what he has seen, that cases of extreme asthenia due to carcinoma or advanced toxemia of any form contraindicate this method. Of the 2354 cases he speaks of three died soon after the injection in a way to throw suspicion on the procedure, but each was in a desperate

condition before the injection was given. Transient diplopia has been complained of in three cases. Faintness and retching occurred in a considerable number of cases; severe headache in about 2.5 per cent of cases, but if all cases of headache are included, in about 20 per cent. Vomiting on the operating table occurred in 10 per cent. Barker is in accord with Müller of Rostock in believing that the measure is a valuable one, the defects of which are probably due to lack of uniformity of procedure.

There were 100 cases in Barker's series in which the analgesia was insufficient for the completion of the operation.

# THE DIAGNOSIS AND TREATMENT OF HYPOTHYROIDISM.

It has become more and more evident that increasing attention must be paid to functional disorders of the glands connected with internal secretion. Well-developed cases of myxedema and cretinism can scarcely be overlooked, but other cases which present the symptoms of these maladies in their earliest stages readily fail of recognition. For this reason we think that there is much of interest in the lecture on this subject which appears in the Clinical Journal of February 28, 1912, by French of London. He emphasizes the fact that thyroid gland often proves itself a most valuable remedy in those instances in which evidences of a lack of thyroid secretion are manifest, as, for example, in certain infants, who without being true cretins nevertheless possess symptoms of apparent amentia or idiocy; in backward children between the ages of two and five presenting various symptoms, of which the two most familiar are perhaps slowness in learning to talk and delay in learning to walk; and in growing boys and girls who suffer either from general mental backwardness, or what is more troublesome in some cases, from persistent nocturnal So also he has found thyroid substance useful in stout, sterile women of the child-bearing age, in women who rapidly become too stout at or about the menopause, and finally in some cases of functional nervous disorder presenting symp-

toms which can be classed as neurasthenia. Other patients suffer excruciating pains from tic-douloureux, and French reports two cases of extreme tic-douloureux which were cured by thyroid medication when all other measures failed, the thyroid extract being given in the form of the dry powder in one-grain doses three times a day, and afterward increased to three grains three times a day, and after some months diminished to 11/2 grains three times a day. Concerning dosage French states correctly that this varies enormously with the individual. In infants and young children 1/2 grain of the dry powder once a day or at most twice a day is usually sufficient, and after it has done good it may be diminished to as small a dose as 1/6 grain; whereas for adults the common dose would be 1 grain night and morning, or whatever quantity is necessary to produce results. Very rarely he has found 5-grain doses necessary. The first symptoms of overdose which manifest themselves are, in children, diarrhea, and in adults, nervousness. The pulse also becomes rapid.

While we should be careful that the extraordinary results produced by thyroid extract in a limited number of cases do not lead us into the error of believing that this substance is a cure-all, we nevertheless remind our readers that the type of cases which Dr. French describes is well worthy of attention.

# DISEASES AMONG SCHOOLCHILDREN AND THE REMEDY.

Upon this topic, of vivid interest to the entire country, there was held a conference in compliance with the desire upon the part of the Mayor of Boston, who was naturally shocked to find upon examination of 42,750 public-school children, reported by the chief of the Bureau of Child Hygiene of the Boston Board of Health, that only 35 per cent of the children examined were up to "physical par," while the remaining 65 per cent were found to be defective or suffering from some definite disease more or less serious. The Mayor naturally propounded a query as to "what the city may and should do to correct such physical defects in schoolchil-

dren as have been or are likely to be found by the school medical inspectors." The conference was called for the purpose of making such practical suggestions as would best aid in remedying the condition.

The most prevalent and important defects are considered in the report, diseases of the mouth, throat and chest being relegated to Dr. Richard C. Cabot (Boston Medical and Surgical Journal, April 25. 1912), who after calling attention to the fact that any betterment in health is necessarily expensive and will increase taxes, urges school clinics attached to and managed by the schools where physicians shall not only diagnose but treat all diseases of schoolchildren, unless the parents signify that they prefer the treatment of a family physician. He regards it as entirely irrational to have all the ways for finding out the defects and then to do what amounts to leaving them unremedied. The family physician will never be expert enough to know what adenoids are to be taken out and what left in, or be able to recognize incipient tuberculosis or to know which cardiac murmurs mean heart disease and which do not. Moreover, he does not in the faintest degree accept the interpretation that one out of every forty-two children has heart disease. Whilst believing the inspectors have done the best they could, he holds that it is impossible for practitioners, not especially trained, to recognize and treat the defects of schoolchildren effectively.

Badger notes that 4 per cent of the children examined were diagnosed as suffering from malnutrition, the causes of which generally date back of the school age. It is of interest to observe that a large percentage of the malnutrition cases come to school without breakfast, or with a very insufficient one, and the majority of cases from homes described as good. As for the remedy, in addition to general education of the whole community in the rules of good hygiene, we must look after the establishment of open-air rooms. Such rooms must be established at once and carefully supervised by a medical inspector. Moreover, lunch should be served at the morning session.

Smith observes that 11,691 cases of skin disease were found among the children examined, the number being exceeded only by decayed teeth, hypertrophied tonsils, defective nasal breathing, and enlarged cervical glands. The commonest diseases are scabies, pediculosis, impetigo, and ringworm, all contagious and representing 55 per cent of all the skin affections reported. As to what can be done to improve conditions, more school nurses are urged, and further familiarity on the part of inspectors with skin diseases, provision for medicated baths and sterilization of the underclothing at the same time. It is further advised that means be devised whereby Tam O'Shanter caps may be sterilized. Common roller towels should be done away with, and either paper or individual towels substituted.

Goldthwait, taking up the subject of orthopedic defects, suggests the customary corrective procedures.

Fairbanks holds that nervous and mentally abnormal children are not usually so made by the school system, but that some educational methods are of influence in perpetuating, if not in originating, nervous and psychical abnormalities, and rendering relief of such conditions difficult, if not impossible. His recommendations as to betterment are the abolition of all competitive work, and the absolute abolition of either moral or material rewards for excellence in school work or attendance. This includes the hanging of flags on the doors of rooms showing the highest attendance for the week or month. The elimination of special examinations, the passing of which is held essential as a requisite for promotion. The making of promotion solely dependent upon the capacity shown by the individual child in its ordinary routine daily work, such promotion to occur whenever the child indicates its capacity for such advancement. The elimination, as far as possible, of a fixed standard, either of grade or of graduation, to which children are expected to conform at definite periodical intervals, or at definite and arbitrarily fixed ages. The elimination of report cards sent to parents weekly or monthly, or at any other time. The substitution in place of such formal certificates

of more personal contact with the parents and the home, by means of parents' associations and meetings, and social visitors; these two agents working in conjunction with the school physicians and the nurses, to ascertain environmental or individual obstacles to the successful advancement of the child. Of special teachers for the inapt, the abolition of afternoon sessions for all grades below the fifth for all children below ten years of age, and where afternoon sessions are held the elimination from the latter half of the day of all recitations or study hours. arbitrary memory exercises, mathematics, history data, geographical facts, grammar and language exercises, and the commitment of rules to memory. The reduction of the time during which concentration of the attention of the pupils is required for any one subject and the abolition of home lessons.

From these and other suggestions no less inadequate it can be seen that the solution of the question in school child hygiene is not to be expected from a conference of medical men untrained in the pedagogic methods of the present day. A thorough education of the rising generation gives greater promise of ultimate good than does any other single method.

#### NEOSALVARSAN.

This is the name which Ehrlich has given to a new preparation, an ingenious chemical derivative from the original salvarsan, possessing the properties of rapid and complete solubility in distilled water, of an equal if not greater therapeutic value than salvarsan and of a lesser toxicity. Schreiber (Münch. med. Woch., Dec. 17, 1911) quotes briefly some laboratory experiments and demonstrates the advantages of neosalvarsan, and holds that if intramuscular injections are employed it should be the preparation of choice, since, being entirely neutral, it produces but a moderate local reaction and is more rapidly absorbed. The strength of solution used for this purpose is 1.5 to 20. None the less it is sufficiently painful and sufficiently irritating to produce a wide edema, both pain and inflammatory swelling, however, being but transitory. As to the

effect upon the lesions of syphilis, the neosalvarsan is, to say the least, prompt as salvarsan. In so far as time has allowed, the Wassermann tests seem to show that it is equally lasting. one case four hours after the injection of neosalvarsan the spirochætæ could no longer be found in the chancre. In all cases they disappeared in twenty-four hours. the less Schreiber is in accord with the majority of syphilographers in believing that the chancre should be excised when this implies no ultimate deformity. The aftereffects of neosalvarsan are distinctly less marked than those incident to the use of salvarsan. Very exceptionally there was some systemic upset. This was particularly marked when the drug was given to prostitutes who were treated as ambulant patients.

As to the dose, this can be safely increased. In men of ordinary stature and strength 1.5 was given; in women 1.2, though not in the beginning of treatment. The first administration is usually 0.9 in men and 0.75 in women, the quantity being gradually increased with each dose. dren were given 0.15, infants 0.05. With the idea of procuring intensified action Schreiber's method has been to give the first day 0.9, the third day 1.2, the fifth day 1.35, and the seventh day 1.5. In case of powerful men the initial dose is 1.5. The final dose is 6.0. Special warning is given regarding care of patients suffering from severe headache or other symptoms denoting involvement of the central nervous system, since it is under these circumstances that the accidents are most frequent from the use of salvarsan. The beginning doses should be small. Neosalvarsan produced a rise in temperature only after the first injection, this lasting but a few hours. When rise in temperature develops after the second, third, or fourth dose it should be attributed to bacteria. Albuminuria has not been observed. In individual cases pronounced leucocytosis was found. Full doses were sometimes followed by the arsenic exanthemata, the latter between the eighth and twelfth day.

Schreiber says that neosalvarsan should

be emptied from its ampoule into freshly distilled water, and that the containing vessel should be gently agitated for a moment until complete solution is accomplished. which is almost instantaneous. Violent shaking is to be avoided, since it may readily accomplish an oxidation. Also, the solution should be made immediately before its use, nor should it be too hot. If a salt solution be used as a solvent it should not be over .04 per cent, the drug undergoing a change and in stronger solutions becoming toxic. As it comes in its ampoule this preparation is a yellow powder much like salvarsan. Allowed to stand in solution, or kept in the envelope not protected from light, it becomes reddish. Schreiber uses for his solution water at about the room temperature at the highest not over 20° C. Indeed he has insisted in his use of salvarsan that solutions of this temperature are better than those which are hotter.

It would seem that in neosalvarsan there is offered to the profession a preparation safer to the patient not only because it is absolutely less toxic than salvarsan, but because its method of administration is

simpler. The greater efficiency of intravenous administration is so well shown and the technique so simple that even were the neosalvarsan devoid of all irritating qualities, which it is not, the intramuscular injections would probably be used only by those of limited experience. It is a fact that a single dose of salvarsan does little else than cause temporary disappearance of symptoms, and still in the popular mind and to an extent in the profession at large there is an impression that one administration is sufficient to accomplish a radical and permanent cure. This is unfortunate for the patients, since it prevents that systematic and continued treatment which has for its end the complete destruction of all the living spirochætæ in the body. such a cure shall be accomplished by repeated dosage of neosalvarsan or some other and better drug yet to be elaborated remains unproven. The most suggestive fact in regard to the completeness and permanency of cure after such treatment is, however, adduced by the compilation of a comparatively large number of cases of syphilitic reinfection.

# REPORTS ON THERAPEUTIC PROGRESS.

### A PRACTICAL POINT IN DETERMINING DIGITALIS EFFECT IN AURICULAR FIBRILLATION.

LEA in the Medical Chronicle for May, 1912, discusses the recognition of extrasystolics in auricular fibrillation. He admits that this presents varying degrees of dif-In some cases they cannot be ficulty. noted, and this more especially where there is a high degree of irregularity and a rapid rhythm. In slow rhythms they can be more easily detected-most easily when they occur in regular sequence, constituting a pulsus bigeminus; less easily when the extrasystoles are infrequent. In the latter cases it is often not possible to detect them in the absence of polygraphic curves. Finally, there are some conditions in which the extrasystoles are not conducted to the radial artery, and a false idea of the fre-

quency may be readily gained. It is suggested that, in the absence of instrumental aid, the following plan should be adopted in cases in which extrasystoles are present and vitiating the true reading of the effect of digitalis: First count over the apex with a stethoscope the total beats during the space of a minute; then count for another minute the number of coupled beats heard; they can in some cases be detected. Finally subtract the number of these coupled beats from the total number noted, and the result ought to give an approximation of the degree of ventricular response to auricular stimuli, and consequently to the degree of blocking effect of the drug employed. By such a method a much truer indication of the effect of the drug upon the heart can be obtained, and a safer control effected over any possible disastrous results.

#### A STUDY OF 3268 VENEREAL PRO-PHYLACTIC TREATMENTS.

HOLCOMB in the January issue of the U. S. Naval Medical Bulletin makes a report and tells us the treatment is as follows:

- 1. Wash penis, head, shank, and under frenum with 1:5000 bichloride of mercury solution with a cotton sponge.
- 2. Pass water. Take urethral injection of two-per-cent protargol solution and hold to count 60.
- 3. Rub 50-per-cent calomel ointment well into the foreskin, head, and shank of penis, with particular care about the frenum.

Either side of the frenum is the most frequent site of sores.

Of the 56 cases of gonorrhea occurring in the first 24-hour interval, 26 were recurrent cases; the remaining 30 were primary infections.

There were 1385 exposures in which the treatment was taken within the first eight hours, and among these men there were 19 infections, or 1.37 per cent.

There were 731 exposures in which the treatment was taken in the interval of eight to twelve hours after exposure, and among these men there were 25 infections, or 3.41 per cent.

There were 920 exposures in which the treatment was taken in the interval of twelve to twenty-four hours after exposure, and among these men there were 46 infections, or 5 per cent.

In the first instance one man out of every 72.9 contracted an infection; in the second period one man out of every 30.2; in the third instance one man out of every 20.

Since compiling the above table, and to include the months of September and October, the total number of prophylactic treatments have increased from 3268 to 3624, with the following results: 1.41 per cent, or 1 man in 70; 8- to 12-hour period, 892 gave 27 infections, 3.26 per cent, or 1 man in 30; 12- to 24-hour period, 968 gave 48 infections, or 1 man in 20.

Gonorrhea was the most frequent disease contracted and had 62 infections to its credit. It is interesting to note the period of incubation in some of these

cases. Undoubtedly all cases with an incubation period of over ten days should be thrown out, as there is probably a question of veracity on the part of the man, who to escape punishment refers his exposure to the last time he took the prophylactic treatment. There are nine who come in this class. We have not excluded them in our statistics, but leave the reader to judge.

There are several factors that should be taken into consideration with regard to the statistics of the prophylaxis of this disease.

A large percentage of the men returning from liberty come on board under the influence of intoxicants, and as a consequence are careless in taking the treatment. Some of the men, who have sensitive urethras, complain of pain on taking the injection. Needless to say, under these conditions the full benefit is not obtained.

### VARIETIES OF COUGH, AND TREAT-MENT FOR RELIEF OF THEM.

DUCKWORTH in the Clinical Journal of May 22, 1912, first states that in acute bronchitis the object is to secure adequate expectoration by simple measures. (In all acute disorders of the respiratory system a warm bed is the first requisite, not sufficiently insisted upon in the early stages.) A mixture of acetate of ammonia, with spirit of nitrous ether, ipecacuanha wine, and syrup of tolu is one of the most appropriate at first, and to this may be added later some oxymel of squill and compound tincture of camphor. A linseed and mustard poultice to the front of the chest by night, and cotton-wool sprinkled with spirit of camphor applied by day, are useful local measures. When the cough is teasing and dry, iodide of ammonium, in two- or three-grain doses, proves effectual in floating off mucus from the trachea and bronchi. In these prescriptions note the intention of giving demulcents with expectorants and securing the soothing influence of opium as contained in one-quarter of a grain in each drachm of the compound camphor tincture

(paregoric). Half-drachm doses of the ammoniated tincture of opium are also of value in restraining cough (Scottish paregoric), as these both contain aniseed oil and benzoic acid. When ordinary opiates are not well borne, heroin may sometimes succeed better.

For chronic bronchitis, especially in elderly patients, we have a larger choice of remedies. The object is to encourage expectoration in two ways-first to render the secretion from the tubes readily mobile. and secondly, to increase muscular power to expel it. The first method is commonly secured by the action of iodides of potassium or ammonium in three- to five-grain doses, and the second indication is met by nux vomica or strychnine. With these any demulcent syrup may be combined. The action of squill may sometimes prove depressing in these cases, when we may employ the infusions of senega, serpentaria, or cascarilla with advantage, adding ten minims of the spirit of aniseed. A favorite prescription of Duckworth's in old patients is the mistura ammoniaci in ounce doses. One of the best local applications is the linimentum terebinthing aceticum rubbed into the front and back of the chest. Be careful in employing opiates in any but small doses in the case of the aged. pinch of snuff is one of the best expectorants, and the sneezing excited by it is usually followed by free expectoration.

The treatment of cough dependent on pulmonary tuberculosis demands careful consideration, and must vary according to the stages of the disease. In the early condition, with limited deposit, cough as a symptom is of less importance than in patients with advanced and progressive disease, yet it is an object to remove products from the air-tubes which may be sources of further mischief, and sedatives might be harmful. If the sputa are viscid, some warm fluid, as hot milk or milky coffee, may prove the best expectorant to relieve ineffectual coughing. Rum in hot milk is sometimes useful where the patient is feeble and emaciated. When the cough is violent it may prove exhausting and induce vomiting. It may also provoke hemorrhage. In such cases some form of opiate is imperative, and one of the best is the compound tincture of chloroform and morphine in doses of ten or fifteen minims. In irritation in the larvnx or trachea and larger bronchi, we may employ inhalations of Friar's balsam, eucalyptus, menthol, and camphor with much advantage. Sometimes a small blister over the sternum is effectual in checking violent attacks of cough. sedative demulcent linctus should be at hand in these cases, and a quiet night may be secured with Dover's powder in fiveor ten-grain doses. One object to keep in mind is not to interfere with the patient's appetite, or to overdo the sedative action sought.

The cough excited by laryngeal disease is more appropriately dealt with by local treatment—inhalation of vapors of benzoin, menthol, eucalyptol, or thymol, singly or in combination, or sprays of liquid paraffin containing menthol, camphor, and oil of cinnamon, the latter being more useful in chronic laryngitis. Lozenges of black currant and ammonium chloride give relief, and small blisters, the size of a shilling, applied on either side of the thyroid cartilage, are helpful in tubercular disease of the larynx.

In plastic bronchitis, the severe cough induced by the occlusion of the smaller bronchi is best removed by iodide of potassium, which commonly succeeds in preventing the formation of the casts, and cures the disease.

Cough dependent on aneurismal pressure is relieved by appropriate treatment for the primary disease, and iodide of potassium with reduced diet is indicated for this purpose, and is generally effectual.

Whooping-cough is restrained by inhalations of benzoin, creosote, and other tar products, while belladonna with bromide of sodium, together with a good dietary, are the most efficient agents.

Tussis hysterica is best not treated as a catarrhal symptom in most instances. It should be ignored if tolerated, and not allowed to incur sympathy. Faradism to

the neck and thorax, repeated as required, may prove very effectual. Unfortunately, on the subsidence of this tiresome manifestation, some other equally obvious hysterical symptom may supervene. Isolation is sometimes helpful in removing many of these strange tricks and nervous perversions.

Duckworth thinks he has said enough to convince us that there is, and can be, no routine treatment of cough as a symptom. In each case we must ascertain the exact cause of it, and seek to reëstablish normal conditions of the affected parts as far as possible.

#### ACIDOSIS.

BEDDARD in the Clinical Journal of May 8, 1912, writes on this state.

In regard to diet, he shows that a proteid-fat or strict antidiabetic diet stirs up acidosis in diabetics much more than in normal people. So much is this the case that this diet can easily send a suitable patient into coma within a week or fortnight of his beginning it. He also shows that the acidosis of this diet is prevented by taking with it about 100 grammes of carbohydrate. Therefore it is perfectly safe to put any diabetic patient straight on to a right diet to which 100 grammes of starch is added. A further reduction of starch below this quantity is often necessary; but it is carried out gradually, and its effect is carefully watched. also shown that vegetables which contain a superabundance of base are of importance in the dietary.

Having started the patient off on a safe preliminary diet, it is next necessary to estimate and control the acidosis by alkalies. The patient is given sodium bicarbonate by the mouth in increasing doses every four to six hours until the urine is neutral or alkaline. As soon as this point has been reached we know that all the acids which are being formed or have accumulated in the body have now base to neutralize them and to insure their excretion. The dose of alkali can then, as a rule, be reduced;

the patient should take enough every day to keep his urine neutral or only just acid. Sodium bicarbonate can be given in cachets, one drachm in each. When, however, large doses have to be taken it is better to dissolve it in warm milk, about one drachm of the alkali in each ounce of milk. It may also be given in a concentrated solution per rectum. Sodium bicarbonate may at first produce some laxity of the bowels, but this soon passes off and is rather a help in severe cases. Occasionally it is not possible to give the patient sufficient alkali to make the urine neutral, because of the presence of an edema similar in appearance to that of acute Bright's disease. The edema is caused by the kidney being unable to excrete such enormous quantities of base in combination with acids: the excess remains behind in the tissues together with water, and edema is pro-This difficulty is rarely seen in young patients; it occurs not infrequently in patients past middle age, because their kidneys are either structurally unsound or have been long irritated by the excretion of acids. As soon as the patient is fully under the influence of alkali his weight begins to go up. This is partly the result of an actual improvement in his condition resulting from the complete neutralization of all acids and the consequent increased ability of his tissues to utilize carbohydrate. But the increase in weight may be exceedingly rapid—several pounds in a few days; such an increase is obviously due to the retention of water in the body, and is as quickly lost if the alkali is reduced.

Having thus estimated and controlled the acidosis, we have now to find the optimum diet for the case. Our object is to keep down the swamping of the tissues with unused dextrose, and at the same time not to stir up the acidosis to a serious degree. At first any reduction of the starch in the food is followed not only by a decreased excretion of sugar, but also by an increased acidosis. It is often, therefore, necessary, instead of giving one diet containing a fixed quantity of carbohydrate, to prescribe alternate diets each of which separately ful-

fils one of the objects in view. Thus a diet of oatmeal and butter reduces the acidosis. but may increase the sugar. This may alternate with periods of fat-proteid or of a diet poor in proteids with the object of reducing the sugar in the urine. As soon, however, as the patient begins to improve materially, we find that the excretion of sugar and of the acetone bodies begins to fall more or less together; because the tissues are now beginning to regain their power of utilizing dextrose, and consequently even the quantity of dextrose derived from the proteid food is now sufficing to prevent the onset of acidosis.

It must be obvious to overy one that if by diet and alkalies we have the power of controlling acidosis in diabetes, it ought to be possible to ward off coma indefinitely, provided that this complication is a pure acid intoxication. It is notorious, however, that although temporary recovery from coma is possible, the patient will ultimately relapse in spite of treatment. It is this failure to prevent coma which alone makes us think that there must be some other factor in its production than acid intoxication.

#### THE PASSING OF BISMUTH PASTE.

Under this caption BLANCHARD in the Medical Record of May 18, 1912, discusses this subject. He was the first to report any considerable number of cases treated with bismuth paste (Journal of the American Orthopedic Association, August, 1908). The treatment showed wonderful results. Old sinuses from tuberculous joint disease were cured in from two to six weeks, but after seeing several cases of severe poisoning and hearing of a number of deaths, he began experimenting with a view to the elimination of the bismuth. The conclusion was soon reached that Beck's theories of the bismuth being a cure because it became radiumized in the body, and that it also served as a sort of trellis on which healthy granulations could grow, were altogether fanciful. There is no doubt that the curative action of the paste is purely mechanical. A danger in the use of bismuth paste that so far has attracted but little attention is the likelihood of the heavy bismuth settling down in pus sacs and sinuses and becoming permanently residual. Blanchard has several cases both cured and uncured in which the x-ray shows accumulated masses of bismuth that have every indication of remaining permanently. In one case, a boy of twelve years, the x-ray shows a mass of bismuth nearly as large as his hand that has been residual for nearly three years and will probably remain so as long as he lives.

The ideal paste for flooding tuberculous sinuses and filling pus cavities must be nontoxic and absorbable. It must sufficiently solidify at body temperature to crowd out the pus, compress the unhealthy granulations, and exclude the air. The following formula for a sinus-flooding paste meets every requirement and is entirely innocuous: White wax, 1 part; vaselin, 8 parts; mix while boiling.

Iodine may be added in badly infected cases. Iodine scales can be reduced to a powder by the addition of 20 per cent of potassium iodide. One, two, or more grains may be put in a small cup. The usual glass syringe should be filled with the hot paste. Half the contents of the syringe must now be injected into the cup and the nozzle of the syringe used to mix the iodine powder into the hot paste. When this mixture is drawn into the syringe the fresh iodine is rather unevenly distributed in the hot paste and it is ready for use. Immediately after injecting the sinus a thick pad of gauze saturated with alcohol should be bound over the opening. The evaporation of the alcohol cools and hardens the paste and prevents its escape. In some cases it is well as a preliminary step to get a skiagram showing all the sinus ramifications and pus pockets. For this purpose Blanchard is injecting sinuses with the following mixture: Ferric subcarbonate, 1 part; white vaselin, 2 parts; mix and boil.

The iron makes as good a skiagram for diagnostic purposes as the bismuth, without its dangers.

The results in over 150 cases of old

tuberculous sinuses flooded with the waxvaselin-iodine paste showed about 35 per cent cured by from one to eight treatments. Thirty per cent more were cured in a year, and about 35 per cent remained unimproved. This last 35 per cent had retained sequestra or were amyloid and hopeless. The ultimate results of cases cured show just about the same with the wax-vaseliniodine paste as with bismuth paste. But in the uncured and the relapsing cases the advantages of the wax-vaselin-iodine treatment were very great. There were no deaths. There were no cases of poisoning with a painful train of symptoms. There were no cases in which the sinuses and pus sacs were clogged by the heavy bismuth settling down and becoming permanently residual.

In occasional favorable cases the abscess stage of tuberculous hip or other joint disease may be cut short by opening the cold abscess with a small puncture, draining it by mild manual pressure, and filling it to its full capacity with a thick paste so as to completely exclude the air and keep the sac sterile till it becomes obliterated. For this purpose the following is an excellent paste: White wax, 3 parts; soft paraffin, 2 parts; white vaselin, 24 parts; mix while boiling. This abortive treatment can succeed only when the abscess shows upon the surface, the area of tuberculous destruction is small, and the quantity of pus is limited.

Experience has taught several "don'ts" in the use of any flooding paste for the cure of tuberculous sinuses. Do not inject a sinus case in which the x-ray shows a sequestrum. The sinus in this instance is a natural drainage tube. It may be healed, but if so the patient will develop a rise of temperature and pains until the pus finds a new exit. By this process the patient is made very much worse. First remove the sequestrum surgically, and then the sinus may be cured to advantage by paste flooding. Do not inject a primary newly opened sinus. The walls are not definitely formed and the injected paste will wander unrestrained, making new sinuses and pockets, causing rise in temperature and disastrous results. Do not obstruct necessary drainage. Wait for several months until the sinus track is well formed and the discharge has thinned down to a semitransparent and only slightly purulent condition. Blanchard has observed two cases of fatal meningitis follow the interception of necessary drainage by the inopportune use of bismuth paste. It is in the old, long-suffering, bedridden cases in which the bone disease has run its course and the old chronic sinuses persist that paste flooding gives truly wonderful results.

Fully 70 per cent of the old neglected or unfortunately treated cases of Pott's disease and tuberculous hip disease with from two to a dozen sinuses and a constant semiserous, slightly pus-colored discharge were cured in from a week to three months. One should not be in a hurry to use the flooding paste, and should remember that the curing of a sinus does not mean the curing of the tuberculous bone disease. If the formation of pus continues the abortive treatment will be a failure and must not be repeated. The bismuth paste treatment has proved a wonderful boon to a class of cases that were practically incurable up to the date of Beck's discovery. The elimination of the bismuth improves the treatment by removing the grave danger of clogging the pus sacs and sinuses with residual bismuth and the constant danger of poisoning, with, perhaps, fatal results.

## ON THE PREVENTION OF OPHTHAL-MIA NEONATORUM.

The Boston Medical and Surgical Journal of May 16, 1912, contains an article by MACKENZIE on this topic. He insists that the physician's responsibility does not rest with the use of prophylactic measures alone, for our therapeutics are by no means infallible; as careful observation should be made of the child's eyes at each visit as is made of the cord stump, or of the temperature or pulse of the mother, this observation to be made under a good light and particular note taken of any swelling, redness,

or discharge. Probably many of those practitioners who conscientiously use prophylaxis as routine fail to consider these latter important duties.

Once the disease is established, what should the physician do? Text-books are numerous and quite fully explain the therapeutic measures to be applied; hence it seems needless to propound them here. One important fact they do not mention, however, is the absolute necessity of careful and efficient nursing. The importance is but recently emphasized by a case which not long since came under his observation, that of a small child with purulent ophthalmia, probably of an otherwise benign type. who through the diligence of the attendant in her efforts to wipe away all the secretion had lost most of the epithelial layer of his cornea, and so given the infecting organisms the chance to ravage the deeper layers of that structure at will; the result, a blind The other extreme, that of not sufficiently washing away the discharge, is probably more frequently at fault. This is inestimably important, for washing away the rapidly increasing discharge is undoubtedly more efficient in combating the disease than all the various germicidal agents em-The attending physician should make himself responsible that all these precautions are properly heeded and the attendants properly instructed; and, furthermore, he should himself watch the cornea for even the slightest haziness, a warning too often seen too late.

#### GONORRHEAL ARTHRITIS.

Sever writes on this topic in the Boston Medical and Surgical Journal of May 10, 1912. This short résumé of some of the more recent literature seems to indicate that the results vary considerably. Apparently in the early and acute and subacute cases results may be good, relief from pain quick, and early function obtained in some cases. In others, relief from pain alone seems to be the one result obtained. This in itself, however, is of value. It would seem that in the early cases before a general infection

had taken place, the mixed bacterins would be of the greatest value as compared to the antigonococcic serum. Apparently, however, the sera have given the best percentage of results, indicating probably that the infection had become a general one and a lack of individual resistance had become established. The matter, however, has not been studied long enough apparently for observers to have come to any definite conclusions as vet in regard to the value of these procedures, and there will probably always exist more or less uncertainty as to the value of the method so long as individual susceptibility and resistance varies. It is almost needless to state that one or both methods-that is, the administration of the mixed bacterins or serum—should be used as a routine in all early cases in the hope of producing an effect.

In the old chronic cases, in which the joints have lost their integrity and become partially ankylosed, orthopedic measures are indicated. The opening of the joint, and the insertion of muscle strips after the fashion of Murphy, or fascia, or distention of the joint by oil and iodoform as advocated by Brackett, seem to offer methods of restoring some function. Stiff and tender spines are to be protected by plaster jackets until the acute irritation has subsided.

### SOME DANGERS IN THE USE OF TINC-TURE OF IODINE IN SKIN DISINFECTION.

The Wisconsin Medical Journal for April, 1912, contains an article on this topic. It reminds us that now that the tincture of iodine has come into common use in the disinfection of the skin prior to operations, some care and discrimination must be exercised to avoid the unpleasant results which sometimes follow its use.

In cases in which the use of a hot, wet dressing after the operation is contemplated, the employment of the iodine is fraught with danger, as under these circumstances there is considerable probability of a severe dermatitis developing even if the iodine has apparently been thoroughly washed off with alcohol before the dressings are applied. The use in the preparation of the patient of a wet dressing over the site of the operation, or even the use of a small amount of water in the form of lather for shaving the part, may lead to the development of an iodine dermatitis, unless the skin is very thoroughly dehydrated with alcohol, followed by ether and completely dried before the tincture of iodine is applied.

### THE TREATMENT OF DYSENTERY.

The Albany Medical Journal for July, 1912, contains an article on this topic by MACFARLANE. He says that the following schema has been used by him for several years past in indicated cases:

## A glass of cold water on arising.

### EXERCISE-15 MINUTES.

Deep breathing	20-30	times
Body bending back- and forwards	10-30	44
Body bending sideways	20-40	46
Body turning	8-24	"
Knee bending and stretching for-		
wards	4-8	44
Body circling	8-30	66
Sawing movement	10-30	46
Body raising	4-12	44
Leg raising sideways (not for		
women)	6-16	46
Hewing movement (not for women)	6-12	"
Throwing the arms back- and for-	•	
wards	20-60	66
Knee raising forwards	4-16	"
Swinging arms sideways	30-50	66
Trotting movement without change		
of base1	00-200	66

#### Eat Slowly and Chew Thoroughly.

Breakfast. — Fruit; oatmeal, hominy grits, cream, and sugar of milk; eggs, fried or scrambled, bacon; Graham or bran bread with plenty of butter, honey, marmalade, or jam; coffee, a glass of water.

# Systematic Habit to Nature's Requirements Absolutely Necessary.

Luncheon.—Small amount of fat meat or fish, as halibut, cod, salmon, mackerel; green vegetables, spinach, cabbage, asparagus, onions, carrots, parsnips, turnips, tomatoes, watercress, lettuce: glass of cider sweetened with a tablespoonful of milk-sugar, or buttermilk; raw and cooked fruits; Graham or bran bread; water.

fruits; Graham or bran bread; water.

Dinner.—Vegetable soup; fish, meat, and vegetables same as luncheon; salads with plenty of oil, cheese; dessert of coarse meals, fruits; cider,

buttermilk, or light beer; water.

Before Retiring.—Stewed prunes, figs, or other

fruits; glass of water.

Avoid tea, red wine, cocoa and chocolate, starches, rice, potatoes, sago, farina, and toast.

Recipe for Bran Bread.—1 cupful of bran: 3

Recipe for Bran Bread.—1 cupful of bran: 3 cupfuls of entire wheat; 1 pint of sweet milk (buttermilk if preferred); 1 cupful of molasses; 1 teaspoonful of salt; 1 teaspoonful of saleratus.

# SURGICAL ANESTHESIA AND OLIVE OIL.

FERGUSON, in the New York Medical Journal of May 11, 1912, discusses recent findings concerning olive oil as a speedy restorer of the patient's power to resist infection.

In summing up the lessons to be learned from his study of the influence of alcohol, chloroform, and ether upon the power of the body to resist disease, the following are points which he says should be emphasized:

- 1. Do not give alcohol in the infectious diseases. It is particularly bad in pneumonia and septic conditions.
- 2. For surgical anesthesia administer at any one time, during the anesthesia, as little of the anesthetic as possible.
- 3. Never use alcohol as a stimulant during or after an anesthesia if the opsonic power of the blood is of any importance.
- 4. Make the anesthesia as short as possible. Begin to administer the anesthetic as late as circumstances permit and remove it just as soon as the operation will allow.
- 5. Use only a strictly pure ether or chloroform, lest impurities in the anesthetic augment the unavoidable depression.
- 6. Take special precautions for asepsis and antisepsis in all operations of any length. A very slight infection, which would not manifest itself under ordinary circumstances, may develop into a serious condition after an anesthesia because of the impaired resistance.
- 7. Inject six ounces of olive oil high up into the rectum in all septic cases, and in all others in which the patient's power to resist infection may be called into play.
- 8. Remember that time is an important factor in restoring the opsonic index, therefore do not delay the administration of the oil.
- 9. In injecting the oil "make haste slowly." The sudden deposit of six ounces of oil may cause it to be ejected, and all will have to be done over again. Give a slow, steady, continuous injection every time.
- 10. Use only pure, limpid olive oil. Absorption to do the most good must take

place comparatively quickly. Therefore take care to have at hand an olive oil free from stearins and other heavy oils, free fatty acids, and other impurities.

11. If there is the slightest question whether to inject the oil or not, inject it. It can never do harm. Be on the safe side.

#### BITES OF INSECTS.

NEAL writes to the *China Medical Jour*nal for March, 1912, that he has found the following procedure very useful:

Take one ounce of Epsom salt and dissolve it in one pint of water, wet a bath cloth so that it will not drip and rub the body well all over, and not wipe afterward but dress, and flies, gnats, fleas, bedbugs, mosquitoes, etc., will never touch you. If one is exposed more than usual, being near water, or in a forest, then make a somewhat stronger solution, wet a cloth and rub the face, neck, ears, and hands well-do not wipe, but allow it to dry; it will leave a fine powder over the surface that the most bloodthirsty insect will not attack. Besides. the solution is healing and cleansing; it will heal the bites, subdue the consequent inflammation, and cure many diseases of the skin.

# CARDIAC DEBILITY AND CARDIAC DILATATION.

GIBSON in the Lancet of May 4, 1912, speaks of the importance of rest. He feels sure that first and foremost amongst the means which we have at our disposal is the vital necessity of rest. It has been universally recognized for many years that, in cases of endocarditis, absolute repose is demanded for a period of at least two months, and that, even after that, life must be very easy for a long time. It is, perhaps, not so fully granted that, in cases of myocardial debility, a lengthy interval must be allowed to elapse before the patient is permitted to return to anything like ordinary duties. After many apparently simple febrile disturbances, so common in all countries, the heart is frequently left in a feeble condition, and many months must pass before the heart muscle is subjected to any stress. When the heart has actually become dilated, as the result of such an affection as influenza, for instance, it may be quite two years before the patient is able to enter upon his ordinary avocations. At first total rest must be enjoined, and this must be carried out in a well-ventilated room with a good exposure. Still better, when it can be attained, one room may be used by day and another by night. The change from the one chamber to the other is certainly most helpful, particularly by inducing sleep. Failing this, two beds may be occupied, the one by day and the other by night, in the same apartment. Although this is not so satisfactory, it is certainly better than using the same bed both by day and by night.

Repose of mind, as well as rest of body, must if possible be secured. Unfortunately, this is not always possible to attain, as the mere fact of illness is in itself likely to induce quite the opposite of a peaceful mental condition; and as to the majority of mankind a serious illness is little short of a disaster, an easy mind is not to be come by in any way. It is therefore, above all things, necessary to furnish the mind with occupation of such a kind as will prevent it from preying upon itself. It must not, however, be overlooked that this employment of the mind should be with subjects which are not in themselves too stimulating. Subjects which are too exciting bring about excessive irritation of the brain cells, with a consequent rise of arterial pressure, producing the twofold result, first of nervous excitement, and afterward of exhaustion; while at the same time the cardiac muscle is placed in conditions of stress from the higher resistance to be overcome, and is therefore likely to undergo strain. It will never fade from his remembrance as long as life lasts, Gibson asserts, how, during convalescence from diphtheria many years ago, his kind attendants essayed to cheer him up by reading "Treasure Island" (then a new work), with the most untoward results in the directions already indicated. The recollection of the immediate palpitation and the subsequent insomnia produced by Stevenson's

charming work furnished a great lesson which never has been, and never will be, forgotten.

The diet of the patient will necessarily vary according to the conditions which have induced the weakness or dilatation, and it should be essentially different in cases arising in the course of some acute affection and in instances of chronic enfeebling disease, or in examples of strain occurring in previously healthy people. In every case, however, two great principles are useful to us-first, that the food which is allowed should have no tendency to cause distention of the stomach or intestines; and secondly, that it should not be of too highly nitrogenous a character. With the first of these two principles in view the separation of the more or less solid portion of the diet from that which is mainly fluid can easily be carried out. To meet the second, it is not difficult to avoid such articles of food as have a high purin content. In this way we steer clear of the use of substances which are rich in extractives. It is usually advisable, also, to limit the amount of animal fat administered, as it has with many the effect of producing a considerable distention. Sugar, on the other hand, is to be warmly recommended as an admirable muscular food, and one which but rarely causes any trouble to the primary digestion.

Closely bound up with the question of diet is that of exercise. There can be no doubt of the efficacy of some form of employment of the muscles. While the patient is kept strictly to bed we may easily, by means of massage, insure sufficient tissue changes in the muscular system through what we may call exercise without fatigue. Its effect must be carefully watched, as in many instances if it be not wisely employed it causes restlessness and sleeplessness, and thereby defeats our efforts for recovery. When judiciously administered it is most soothing to the patient and most beneficial in its results. Later on the masseur (or masseuse) will be permitted to give some passive exercise to the limbs, and here it may be said that the manual treatment of Stockholm is, from every point of view,

better than the resisted exercises of Nauheim. At a subsequent period if all goes well the patient may be allowed to begin some active exercises, especially those combined with deep breathing, which is of immense service, both in thoroughly aerating the blood and promoting tissue changes and also by unloading the venous reservoirs and relieving the heart.

It is only within recent times that the employment of cardiac remedies has been based upon pharmacological principles, instead of empirical deductions, and in many respects we are still only on the threshold of exact knowledge. A good deal, however, has been done to render our use of cardiac remedies more scientific than it used to be; while recent additions to the facts at our disposal have, in most instances, proved that the results of practical experience have been of definite value.

In cases of simple cardiac weakness the employment of the salts of calcium has proved, in Gibson's hands, to be of much efficacy, and the clinical use of the drug is now explained by the observation of Lingle, Howell, and Cameron. Calcium cannot start rhythmical contractions in the heart after it has been brought to a standstill; this requires a solution of some sodium salt. But the salts of sodium cannot maintain the action of the heart—it is necessary to employ the salts of calcium in order to sustain rhythmical action. The researches of Cameron show that the salts of calcium have a marked effect in increasing the tonicity of the heart, and they entirely bear out the utility of the salts in the treatment of cardiac weakness. For some years it has been Gibson's custom to use calcium chloride in this way. In the case of those who have any rhythmical disturbances, which appear to be especially the result of interrupted innervation, the combination of bromine with calcium has proved of remarkable value; while in patients, mostly of older age, who have a tendency to degenerative changes in heart and arteries, iodide of calcium is of at least equal importance. Both of these salts can be administered in the form of elixirs, and they may be combined in cases

which seem to require the administration of both halogens.

Nux vomica and strychnine have for long been employed in cardiac failure. can be no doubt that, from a clinical point of view, strychnine is of great importance when there is a liability to failure of the heart muscle, and it is very largely employed, with the most excellent results, by physicians in general. The arterial pressure indicates comparatively little changes under the influence of this drug, but the rate of the pulse is diminished, and from the investigations of Cameron it is clear that strychnine increases cardiac tonicity except when so much diminution of rate has been produced as to lengthen the period of Strychnine, administered hypodiastasis. dermically, produces much more definite effects than can be obtained by internal use. But when there is any particular reason for desiring the influence of a colloid, rather than a crystalloid, in respect of the alimentary tract, one of the preparations of nux vomica may be administered. In many cases of cardiac failure associated with nervous manifestations, strychnine with hydrobromic acid is a valuable combination; Gibson's own experience, nevertheless, has taught him, he asserts, that in many instances of cardiac weakness along with profound nervous disturbances strychnine is not to be recommended. This is especially the case in the tachycardia which attends the cardiac debility following diseases such as influenza, in which a combination of the bromides with digitalis or strophanthus is much more useful. It is rather difficult to explain this, as the employment of strychnine, as a rule, diminishes the frequency of the heart. The only reason which seems to account for the increase of the symptoms in such cases is to be sought in the stimulation of an already irritable nervous system. An interesting fact about strychnine is that when the influence of the vagus has been removed the administration of strychnine decreases tonicity through an increase in the systolic output. This result is not accompanied by any appreciable change in the arterial pressure, but is attended by reduction of frequency. It is extremely probable, therefore, that strychnine, like digitalis, increases tonicity through its action upon certain fibers of the vagus nerve. Another most interesting fact is that an increase in tonicity may occur without any change in maximal, minimal, or mean pressure, as well as in pulse-rate; this is perfectly in harmony with clinical observations, showing that strychnine has a good effect in cases of dilated heart, even when no alterations can be observed with the sphygmomanometer.

The action of digitalis as regards arterial pressure and systolic output has been so often described, and the main facts are so clearly recognized, that little more requires to be made of this aspect of its action. The constriction of the peripheral vessels, the rise of arterial pressure, and the diminution of the pulse-rate are constant features with moderate doses; the systolic output may be increased or diminished, but is more usually little changed-such are facts universally acknowledged. These actions are clearly stated in the best of our standard works on pharmacology, such as that of Cushny. A most interesting discussion on digitalis took place in London in 1910, and the views of Mackenzie and Wenckebach attracted great attention. Since then Mackenzie has published a long series of observations on the actions and uses of the drug.

As regards the action of the drug on tonicity the experiments of Cameron show that digitalis brings about marked increase of tonicity. The therapeutic employment of digitalis in cardiac failure undoubtedly depends very greatly on this increase of tonicity, although its effects on contractility are also of much importance. By increasing tonicity digitalis reduced the size of the cardiac cavities, which do not therefore expand so much during diastole; the residual blood is thus diminished, and contractility is, as it were, allowed to act under more favorable conditions. Stewart has shown, for the dilatation produced by aortic incompetence, that no appreciable amount of blood regurgitates into the ventricle until tonicity has been diminished. This, in itself, is an admirable answer to those who fear to use digitalis in aortic incompetence, and a complete justification of the views of Balfour.

Strophanthus is; in its effects on tonicity, strictly analogous to digitalis; but, as is now well known, it has much less influence over the peripheral vessels and brings about a smaller degree of vascular contraction. In cases, therefore, in which the arterial pressure is high, while cardiac tonicity is low, strophanthus is distinctly indicated. It has a further advantage in that its action is brought about with great rapidity.

Although adrenalin is not a substance which we are likely to employ for any direct action upon the heart, it is yet so commonly in use for a variety of other conditions that a glance may be given at its effects on tonicity. The observations of Cameron seem to indicate that adrenalin actually lowers tonicity before it affects arterial pressure, but that, after the drug has brought about a general vasoconstriction, it leads to a gain in tonicity through increased intraventricular pressure.

Nitroglycerin has been for a good many years very largely employed, in order to relieve spasmodic contraction of the arteries and arterioles, and it is encouraging to know that this decrease in arterial pressure is attended by elevation of tonicity. In very many instances of cardiac weakness, with or without dilatation, the influence of nitroglycerin and the other remedies belonging to this series is of the greatest advantage. A very interesting point is that the employment of digitalis, in combination with nitroglycerin, receives from the researches of Cameron strong scientific support, the combination of these drugs having a decided tendency to increased tonicity, while the nitroglycerin greatly diminishes the vascular constriction. It has long been known to Gibson that a high diastolic pressure is more serious than an elevated systolic pressure in elderly persons, with a tendency to cardiac failure, and the following remarks made by Cameron with reference to a case of heart failure are of interest in this connection:

"Summarized, the action of digitalis alone is to increase both systolic and diastolic pressures, thus not altering the pulse pressure greatly. Nitroglycerin alone produces a fall in both systolic and diastolic pressures with but little change in the pulse pressure. But a combination of the two secures the increase of the systolic pressure due to digitalis, and the decrease of the diastolic, and especially the mean, pressure attributed to the nitroglycerin, thus resulting in a greater increase of pulse pressure than would be obtained by either drug alone. The patient's condition varies with the pulse pressure, being better when the pulse pressure is large, worse when it is small."

# DANGERS AND AFTER-EFFECTS OF ANESTHESIA.

BUXTON in the Clinical Journal of April 24, 1912, mentions briefly some of the more common complications. In referring to vomiting he believes it necessary for us to trace to its source the origin of vomiting. Vomiting may be either a slight complication, or it may be a very grave complication indeed, leading eventually to death. Vomiting is due to either irritation of the mucous membrane of the stomach arising from the entrance of the anesthetic condensed from its vapor into the stomach or to interference with metabolism—we will call it gastric vomiting-or it may be due to brain conditions, and of course it may arise from renal conditions. When vomiting arises from cerebral or cerebellar conditions it is believed, Buxton thinks upon sufficient evidence, that this vomiting is caused by interference with the circulation in the central nervous system during the prolonged operation. This may be due to the head having been kept at too low a level. We are in the habit of teaching that in order to avoid syncope the head should be kept low. We have now to face the question of the vomiting, and to be told that if the head is too low there will be a greater amount of vomiting. Buxton thinks it is true that unless there is obvious ischemia of the brain, prolonged depression of the head, especially in

plethoric persons, will tend to produce postanesthetic sickness. And the treatment of it, Buxton thinks, is that as soon as the patient has come through the operation, if he is not greatly collapsed he should be kept fairly raised so that the head may not be subjected to the danger of congestive conditions.

The actual vomiting from the stomach may be due to imperfect preparation of the patient. Take a case of this kind: A patient is starved for a long time. He then has a violent purge, after having been previously constipated, and the result of the purge given immediately before the anesthetic is to produce a very considerable degree of hepatic catarrh. As a result he vomits, and vomits bilious material for a long time. If the patient is carefully prepared, has no purge for two days previously to the operation, and has the bowels properly regulated, such vomiting is avoided. In the case of a person who is known to be inclined to vomit, the best plan is to feed by the rectum for twenty-four hours before the anesthetic and to allow copious libations of hot water for three days before; in this way we will avoid this after-effect. With regard to the renal vomiting, that is a very, very serious condition. It is due, not directly to the anesthetic, but to the operation, and while it is primarily due to the operation it may be also due to too much anesthetic having been given.

Nearly all the after-effects—vomiting. headache, acute mania-result from overstimulation even more than from the anesthetic itself. There has been too much of the anesthetic given. This may arise in two ways: the anesthetic has been given either in too concentrated a vapor, or the narcosis has been kept at the same level throughout a prolonged operation. We have yet to appreciate the fact that in order to remedy or prevent after-effects we must lessen the amount of the anesthetic throughout the operation, and do so in proportion to the actual requirements of the patient and the surgeon. If we do this—i.e., eliminate the anesthetic, which is the crux of the matter so far as the patient is concerned, during the first twelve hours after the operation we lessen the amount of work which has to be carried out by the lungs, by the kidneys, and by the tissues in general. But further, there is one important question which arises in regard to vomiting, and that is the condition which is spoken of as "delayed chloroform poisoning," or acidosis, the cardinal symptoms of which are restlessness, delirium followed by excessive vomiting, and death within forty-eight hours, as a rule The most conspicuous from exhaustion. symptom is the presence of acidosis, or at least the presence of B-oxybutyric acid or diacetic acid in the urine. This puzzling state we find is in many respects similar to the cyclic vomiting in children. In those cases we know that the vomiting is apparently related to changes of diet. Now in the same way in post-chloroform vomiting, we know it follows not only chloroform, but all other anesthetics, and appears to have very little relation to the actual amount of anesthetic taken. Hence we arrive at the conclusion that the patient has died as a result of narcosis, although other factors have been at work. The obvious treatment is to prevent starvation while we combat the symptoms. The old treatment was to give alkalies, but that line of action no longer appears convincing. We know the disease is due to exhaustion of the liver and to damaged tissue, so the treatment is to give glucose, if possible by the mouth, or failing this, by rectal injection; treated in this way, these cases do, as a rule, extremely well.

In conclusion, he impresses upon our memory that anesthetics first produce anesthesia; if they are given in excess, they produce damage to the tissues of the body, and so arise deleterious "after-effects." When after-effects show themselves, seek to ascertain the exact cause and origin of their symptoms, and try to remove the cause and assist nature to regain her balance of power. Remember that a patient's vitality is lowered after undergoing an operation under an anesthetic, and so is extremely susceptible to malign influences such as cold, infection, and so on; hence it is our duty to

protect him from the influence of such deleterious agencies. In this, as in all other cases, prevention is better than cure.

# UTERINE HEMORRHAGE AND THE CURETTE.

In the Lancet of April 27, 1912, WHITE-HOUSE discusses this subject, and in conclusion makes a few remarks on treatment carried out on the lines indicated in his paper.

First, as to the rational treatment of idiopathic uterine hemorrhage, it will be evident that neither ergot nor curetting will effectually control the condition. It can indeed be truly said with regard to uterine hemorrhage that the keystone of the therapeutic arch lies in a correct diagnosis. Uterine bleeding must be considered as a symptom only, and no stone must be left unturned to limit the examination to the pelvic organs. The abdomen must be examined for evidence of hepatic enlargement, the bloodpressure must be accurately measured by a sphygmomanometer, and the condition of the vessel walls ascertained. Evidence of syphilis or other constitutional disease should be looked for, and if possible the calcium index estimated. The condition of the heart, lungs, and thyroid gland must be noted, and if circumstances permit, a bacteriological examination of the uterine blood should be conducted. If the uterus is sterile, and no other cause is found to account for the bleeding, then one may confidently recommend curetting as a therapeutic measure. Individual treatment will, of course, depend upon the condition diagnosed. Thus where the bleeding is due to a high arterial blood-pressure the tension must be reduced by purgation, nitroglycerin, and dieting. Purgation will also have its place in depletion of the portal circulation where hemorrhage is due to hepatic cirrhosis. If the calcium index is low menorrhagia will probably be benefited by the administration of this agent, preferably in the form of the lactate.

In the case of bacterial infections Whitehouse has obtained good results by intrauterine applications such as peroxide of hydrogen, Churchill's iodine, or protargol. Treatment in these cases must be thorough and prolonged. The curette under such circumstances should, according to Whitehouse, be absolutely tabooed.

Finally, where hemorrhage is due to rupture of degenerated vessels in the uterine wall, hysterectomy appears to be the best and safest procedure. Howard Kelly devised a partial hysterectomy for similar cases, and it was introduced into England by Victor Bonney under the name of "utriculoplasty." So far the operation, in London at least, has received but little support, the general opinion being that if hysterectomy is required to relieve severe bleeding, it is preferable to perform the complete operation.

Such, then, is a somewhat brief consideration of a group of cases which Whitehouse believes are of considerable importance to those of us who are called upon to treat the special diseases of women. If all our patients suffering from excessive uterine bleeding could receive the benefit of a detailed examination before resort is made to the curette, Whitehouse asserts he feels sure that it would lower the 20 per cent of failures referred to in his paper, and help to prevent the operation of curetting from falling into discredit.

#### BOILED MILK.

The London Local Government Board has issued a report on "The Value of Boiled Milk as a Food for Infants and Young Animals" at a time when some authoritative review of this controversial matter is very urgently needed. The investigations on which this report is based have been conducted for the Board by Dr. Janet Lane Claypon, who has already made herself an authority on this question by research work carried out at the Lister Institute. Germany has been the chief field of her inquiries, and the clinical and experimental material afforded by the clinics of Professor Finkelstein and Dr. Ballin in Berlin has afforded a considerable part of the data on

which the conclusions are based. The report shows evidence of careful work, a wide knowledge of the physiology of nutrition and dietetics, and familiarity with the possibilities and limitations of the statistical method—credentials which are often lacking in those who speak authoritatively on the subject dealt with in the document. In appraising the value of the heterogeneous fragments of evidence with respect to the claims of the rival parties the cue, the motive, and the personal factor of each witness must, like the figures themselves, be regarded as variable, for which allowances must be made.

It is clear that the author of this report has not allowed her judgment to be influenced by the glamour of names or the prestige of authority. Facts, figures, and opinions from all sources have been submitted to a careful scrutiny and analysis. And by this method a number of treasured beliefs in the virtues of raw milk have been weighed in the balance and found wanting. One of the outcomes of this report is to show that when a young animal is fed exclusively on the milk of a different species of animal it is immaterial, as far as the nutrition of the former is concerned. whether the milk is boiled or not. On the other hand, it does make a difference whether the milk on which the young animal is fed is, so to speak, a foreign milk or whether it is derived from an animal of the same species. This is the most striking positive evidence obtained by the inquiry. As regards boiling, however, infants who are fed on milk which has been drawn from the breast of a wet-nurse, and boiled previous to use, appear to thrive just as well as when the same milk is given fresh. Although probably unavoidable, it is unfortunate that the evidence of the weight chart should be the pierre de touche of the standard of nutrition, especially when dealing with so delicate a matter as imponderable qualities of milk known as "antiscorbutic." Infants who are fed on condensed milk or patent foods can often show weight charts which put to shame the best results of breast feeding-but such infants are not infrequently rickety and at times scorbutic. The fact is that mere weight, apart from other factors, is but a poor measure of health or nutrition. Minor degrees of scurvy and rickets are very liable to escape notice in dealing with large numbers of infants at public clinics, who are soon lost sight of in after months, but, for all that, they consider that this report clearly proves that vast numbers of infants can be fed on milk which has been boiled or otherwise heated to high temperatures without suffering any of the alleged evils which are imputed to this procedure.

They do not for a moment take the position that all infections and contaminations of milk may be safely neglected if only the milk is boiled before it is consumed, and would deprecate any suggestion that the much needed improvements in the protection of the milk-supply may be dispensed with or postponed because the householder can boil his milk and so escape the principal risks entailed by present conditions. the moral that clearly emerges from this report is that, since the dangers of boiled milk are so problematical that they may be neglected, and since the danger of infection from unboiled milk is so real, it is wisdom to boil all milk before it is given to an infant to consume.—Lancet, April 27, 1912.

# TREATMENT OF SEVERE CASES OF DIABETES.

SCHMOLL writing in the California State Journal of Medicine for May, 1912, tells us that the key-note of the dietetic treatment is not the qualitative but the quantitative restriction of food. It is not sufficient to give the patient a diet list of foods allowed and forbidden, because every case has a different amount of tolerance to carbohydrate and to proteid. There are also those remarkable cases in which the true carbohydrate is tolerated better than that formed in the destruction of proteid, so that while they may be allowed a considerable amount of carbohydrate food without an increase in sugar excretion, they cannot stand any excess of proteid.

The first step in the treatment must therefore be a determination of the tolerance to these two foodstuffs. In practice, we put the patient on a diet containing 100 to 120 grammes proteid, and then we cut down the amount of carbohydrate from day to day. If the patient becomes sugar-free on a simple restriction of carbohydrate, his case will be easy to handle and the prognosis is good.

It is wrong to interdict all carbohydrate food in every case simply because the patient is a diabetic. There is a certain limit of tolerance in every case, and this must be determined at the outset. When it is desired during the study of the case to give a strictly carbohydrate-free diet, great care should be taken and the change had better be gradual—extending over a few days. The reason is that there is very often an alarming rise in the acidosis at this time, and the amount of urinary ammonia and the intensity of the ferric chloride reaction for diacetic acid should be watched from day to day.

Some diabetics seem to react a little differently to different carbohydrates. For instance, it is known that levulose will occasionally be oxidized so completely that it will not affect the glycosuria, but in the majority of cases it is changed to dextrose and excreted as such. Lactose is also oxidized by some diabetics, while in others the influence of carbohydrate tolerance is so pernicious that milk has to be strictly forbidden.

If the patient does not lose his sugar under simple restriction of carbohydrate, he proclaims his inability to take care of the proteid sugar, and this item must now be reduced to the lowest limits—60 to 70 grammes daily. These cases are somewhat paradoxical in that they will oxidize a good deal of carbohydrate after the proteid is cut down.

It is a good rule, even in the lighter cases, to keep the proteid as low as possible, because this has a tendency always to increase carbohydrate tolerance. Conversely, it is a grave mistake to give any diabetic large amounts of meats and eggs, because they

are bound to do harm. When we want to increase the caloric content of the diet, it is fat that we must add, and we may use it freely, since we have seen that it rarely has any influence upon the disease. It is now our mainstay in supplying the caloric needs of the diabetic, and the realization of this point has contributed very largely to the recent advances made in the handling of diabetes and to the more hopeful prognosis which we can now give.

There are cases which do not become sugar-free even after careful attention to all the points suggested above, and in these cases there must be a reduction in the total amount of metabolism. In the theoretical discussion at the beginning of his paper Schmoll shows that one of the salient features in diabetes is this general increase in metabolism, and it must be met by a corresponding retrenchment. It is in these cases that we must use the "vegetable days" of Naunyn, which are really "starvation days," since only some 300 calories are given with a proteid content of 5 to 10 grammes.

Two thousand two hundred to two thousand five hundred calories is generally sufficient to keep the patient from losing in weight and strength. Some loss of weight at the beginning is often unavoidable, especially when the patient has been overfed for some time, but a balance should be obtained as soon as possible. Even the obese diabetics should not be reduced, as none of these patients stand loss of weight well, and when it occurs they often develop an alarming acidosis. There is very little trouble in maintaining the weight after the patient is sugar-free, because under these conditions a diabetic shows a decided tendency to hold his own.

When, after a week or two of careful treatment along the lines laid out above, the patient still shows traces of sugar, it is generally better to rest satisfied for a while rather than to forge ahead and run the risks of acidosis and lowered nutrition. The improvement up to this point will stop the progressive tendency of the disease, and with increased tolerance these traces may disappear of themselves.

Any one can see that we cannot safely or intelligently pursue such strenuous treatment unless we know the caloric value and proteid and carbohydrate content of the diets which we vary from day to day. A record has been worked out in Schmoll's laboratory by Dr. Alvarez, which shows very conveniently the different data from which the progress of the case can be judged. All these facts are later charted together in another table, so that the characteristics of the patient and his therapeutic points of attack can be seen in a moment.

In calculating the value of a diabetic's diet, we must not forget the loss sustained through the excretion of glucose, and, in severe cases, oxybutyric acid. If the patient is excreting 100 grammes of glucose, we must subtract 400 calories from his total, since he obtained no benefit from what was not burned in his body.

Thus far our therapeutic measures are seen to follow very closely along the lines laid down in the laboratory, but we must now enter the realm of empirics.

For a long time it has been known that good results could be secured in some severe cases of diabetes by feeding large amounts of carbohydrate in one single form. Thus, older writers have advocated the giving of cane-sugar; Düring proposed an exclusively rice diet; Mossé had his "potato cure;" and finally v. Noorden discovered the "oatmeal cure." He found that patients who had failed to lose their glycosuria entirely under the strictest dietary might become sugarfree on a diet containing 250 grammes of oatmeal, and after two or three days a return to their former diet would show a great increase in tolerance.

This discovery has been amply confirmed and gives us a new way of handling the dangerous cases in which the acidosis becomes more and more menacing. As seen above, this is due to the almost complete absence of carbohydrate oxidation; and with the burning of the oatmeal starch there is a prompt and decided diminution in the acidosis. The oatmeal diet must be used intelligently, however, if results are to be secured. It must be preceded by at least

two vegetable days, as described above, so that the blood may be cleared of the sugar excess and the oatmeal can have a fair start.

On oatmeal days, 250 grammes of oatmeal is given as gruel in which 300 grammes of butter is incorporated. No other carbohydrate may be given in even nominal quantities, or failure will result; the glycosuria will rise and tolerance will fail. Sometimes some vegetable or egg proteid may be given with the oatmeal, but of late Schmoll has obtained better and more constant results by omitting all proteid. Meat proteid is out of the question, as it increases the glycosuria and prevents the action of an exclusively oatmeal diet. After two or three days of oatmeal diet it is well to have one or two vegetable days, before returning to standard diet.

The oatmeal diet may frequently fail for one or more of the following reasons: First, it causes acute intestinal disturbance, which may even bring on coma in a severe case; secondly, it will increase the glycosuria in some cases; and thirdly, it may cause acute fluid retention in the body, the so-called "oatmeal edema." This complication may be avoided by giving theocin at the same time.

The success of the oatmeal diet has been one of the greatest puzzles in diabetes. The theory has been advanced that oatmeal starch has a distinctive composition which allows of its absorption in a way different from other carbohydrates. Another suggestion is that oatmeal contains some substance which favors carbohydrate oxidation either through stimulation of internal secretion or through an action like that of glutaric acid.

#### SALVARSAN.

PATTERSON in the Military Surgeon for May, 1912, concludes as follows in a paper on this subject:

- 1. While in the majority of cases intravenous administration of salvarsan is probably the best method, the intramuscular injection should by no means be abandoned.
  - 2. The intravenous should be used first.

- 3. All cases of lues should complete their supposed cure with an intramuscular injection or injections, particularly in cases of more than three months' standing.
- 4. Mercury should be used regularly in the treatment of syphilis, following up the salvarsan.
- 5. In tertiary syphilis potassium iodide should also be used.
- 6. When using the intravenous method, only freshly distilled and sterilized water should be employed to dissolve the salvarsan.
- 7. In diluting the dissolved salvarsan, only normal saline solution should be used, which has been made with freshly distilled and sterilized water, and chemically pure sodium chloride.
  - 8. Acid solutions should never be used.
- 9. Salvarsan dissolved and diluted with distilled water only should never be injected.
- 10. The use of oily suspensions of the drug compares favorably with aqueous solutions in its intramuscular exhibition.
- 11. Intramuscular injections should not be made into the muscles of the lumbar region, but in the gluteal region high up and to the outside.
- 12. Lesions of the eye and ear do not contraindicate the use of salvarsan.

### THE HYGIENE OF PREGNANCY.

CRAGIN in the New York Medical Journal of June 8, 1912, has this to say on this topic:

First, as to the care of the kidneys. There are two certain indications in the care of the kidneys during pregnancy which may well be impressed upon the laity. In the first place the kidneys during pregnancy have more to do than in the non-pregnant state, as they are called upon to excrete waste products both of the mother and child. This excretion is favored by keeping the urinary tract well flushed out with large draughts of water, and it is hindered by anything irritating the urinary tract, such as alcohol.

It is Cragin's custom to advise his patients to drink if possible six glasses of

water each day between meals: one before breakfast, two in the middle of the forenoon, two in the middle of the afternoon, and one at bedtime. At the same time he forbids the use of all alcoholic drinks.

Of all the criteria of the condition of a woman during pregnancy, none is so available or so trustworthy as the frequent examination of the urine. It is not enough to have the urine examined once, and if it is found normal to rest assured that it will remain so. Within a week conditions may change entirely, and examination of the urine may show that the woman is in grave danger. The urine should be examined as often as every two weeks, even if the woman is feeling perfectly well, and the woman who does not send regularly to her physician a specimen of her urine is running a risk which, in the present days of enlightenment, is unjustifiable.

The elimination through the skin of the woman during pregnancy is a process which certainly should not be neglected. For this reason frequent bathing is not only a comfort, but a safety. The temperature of the bath may be determined largely by one's habits, and where a woman has always been accustomed to a cold bath in the morning, Cragin asserts he has not found that its continuance during pregnancy does harm. One or two warm baths each week just before retiring, in addition to the regular morning cool bath, will prove of value in increasing perspiration and thus favoring elimination. An extremely cold bath for one not accustomed to it should be avoided. On the other hand, a very hot bath should not be taken.

In the care of the breasts during pregnancy, cleanliness is to be maintained by frequent general bathing. The cleanliness and toughening of the nipples obtained by bathing them daily with a saturated solution of boric acid in 50-per-cent alcohol has seemed in his experience to add greatly to the comfort of the woman during the nursing period which follows.

The elimination of both maternal and fetal waste products, through respiration, and the need of fresh air are often over-

looked by the pregnant patient until she finds herself in a crowded room where the air is bad. She then realizes that she needs fresh air and plenty of it, and that she soon feels faint if she does not seek it. Sleeping with open windows and spending a part of each day in the open air are almost essential to a high standard of health during pregnancy.

During pregnancy the mental condition of the woman is usually that of high tension and unstable equilibrium. There are numerous causes for this. She may have found herself pregnant unexpectedly, perhaps unwillingly. Her plans for the year or two to come may have to be entirely rearranged. She may feel like secluding herself from her friends and abstaining from occupations she enjoys. She may feel wretchedly from the nausea which, although made light of by her friends, is disagreeable enough for her. She may dread the ordeal of her labor; and last, but by no means least, she may be suffering from a form of poisoning resulting from the lack of elimination of waste products from the body, the results of this poisoning showing themselves chiefly in the nervous system.

#### ALOPECIA: TYPES AND TREATMENT.

Dyer writing in the New York Medical Journal of June 8, 1912, gives these directions as to the general indications for treatment:

Treatment generally must be based upon the etiology. When related to particular diseases, these must be treated. Idiopathic baldness is usually permanent and without relief. The following may be adopted in most cases:

The frequent washing of the scalp with green soap or tar, resorcin, naphthol, and sulphur soap, and the application of stimulating substances. Of these are to be mentioned chloral hydrate, tincture of jaborandi, spirits of rosemary, cantharides (in tincture and guardedly), tar oils (cade, birch, pine, etc.), castor oil, croton oil (in minute quantity), alcohol, and chloroform. The use of any application should be intel-

ligent: oily substances should be employed when the scalp and hair are dry; desiccating or alcohol preparations when the hair is oily or the scalp greasy. Combinations may be made antiseptic with resorcin (two to five per cent), salicylic acid (two to five per cent), lactic acid (two to five per cent), bichloride of mercury (1 to 1000), or with carbolic acid (not over two per cent), each of which is also somewhat stimulating to hair growth. The use of the high-frequency effluve in some cases of long standing has proved satisfactory.

#### TREATMENT OF PSORIASIS.

In the Monthly Cyclopedia and Medical Bulletin for June, 1912, Bernheim gives this advice. He states that whether psoriasis is an infection, a toxemia, or a neurotrophic disturbance does not matter for our present purpose. He briefly mentions a few points not in direct relation with the treatment of the disease:

- 1. Localization: Extensor surfaces of extremities; head.
- 2. Duration: Typical course; propensity to relapses.
- 3. Hereditary influences: Such cannot be denied, as there is frequently an evident predisposition to the disease in members of the same family.
- 4. Character of the efflorescences: Silvergray scales, large lamellæ, on an easily bleeding substratum.
- 5. Differential diagnosis: Ready confusion with herpes squamosus, herpes (tinea) tonsurans, lues.

In the last nineteen years he has had under his observation eleven well-developed cases of universal psoriasis which he treated with most excellent results by the method about to be described. In a number of instances relapses did not occur at all; and where they did occur, they were of such small extent as to be almost negligible.

The patient is put into a warm bath (98° F.), to which, if the skin is tender and irritated, chamomile or bran and washing soda are added. The skin is rubbed slightly once or twice with soft soap (sapo viridis)

and washed off. The scales are then readily removed. The patient is next washed with a solution of mercury bichloride (1:1000), and after this the skin is tarred with:

Dei rusci,
 Olei fagi pinguis, of each 20.0 (3v);
 Alcoholis diluti, 10.0 (3ijss).
 M. Sig.: Tar.

(The tar oils must be fresh.)

After the patient's skin has been well tarred, he remains in the bath for twenty to thirty minutes. After the bath the tar is washed off and the affected parts are treated with a paste of salicylic acid and sulphur:

- R. Acidi salicylici, 1.0 (gr. xvj);
   Sulphuris præcipitati, 4.0 (3j);
   Zinci oxidi,
   Amyli tritici, of each 1.0 (gr. xvj);
   Petrolati, 25.0 (3vj).
- M. Fiat pasta. Sig.: Salicyl-sulphur paste.

Talcum powder is then dusted thickly over the parts to which the paste has been applied.

No treatment is given for the next fortyeight hours. At the end of this time the following ointment is applied to the affected parts:

- Pyrogallolis, 3.0 (gr. xlvij); Adipis lanæ hydrosi, 30.0 (3j).
- M. Fiat unguentum.

Talcum powder is heavily dusted over. After another two days' pause the following ointment is used:

- R Chrysarobini, 5.0 (gr. lxxx); Adipis lanæ hydrosi, 20.0 (3v).
- M. Fiat unguentum.

This is put on the affected parts, which are then dusted with powder. Chrysarobin occasionally causes a general dermatitis, and may bring about severe burning and itching; it may, therefore, become necessary to avoid applying the paste to all the affected parts at one time, but to cover them gradually.

In the treatment of psoriasis of the face we should avoid chrysarobin, and substitute another ointment having this formula:

P. Unguenti hydrargyri ammoniati, Pyrogallolis, of each 1.0 (gr. xvj); Unguenti zinci benzoatis, q. s. ad 25.0 (3vj).
M. Psoriasis of the scalp is best treated by washing with a 1:1000 solution of bichloride of mercury.

In addition to the local treatment, Bernheim prescribes for the patient two kinds of pills according to the formulæ:

R Acidi carbolici crystallisati, 10.0 (3ijss); Ext. et pulv. glycyrrhizæ, q. s. Fiant pilul. No. C.

Sig.: From 3 to 10 pills daily, taken after meals.

R Arseni trioxidi, 0.5 (gr. viij);
Pulveris piperis, 6.0 (3jss);
Acaciæ, 1.5 (gr. xxiv);
Altheæ, 2.0 (gr. xxxij);
Aquæ destillatæ, q. s.

Fiant pilul. No. C.

Sig.: Increase from 1 to 8 or 10 pills daily.

As for hygiene, the patient should be required to take plenty of fresh air and rest; he should not tire or overexert himself in walking or any other exercise. The diet should be bland, consisting of articles such as milk; sweet, fresh butter; cereals, thoroughly cooked; green vegetables, thoroughly cooked, and purées; eggs, omelets; noodles, macaroni; custards, puddings of rice or tapioca; soups made with rice flour, barley flour, lentil flour; stewed fruit, etc. Meat and alcohol should be avoided, at least for some time.

The use of the tar and ointment is ordered only for a short period, whereas the pills should be taken for a longer time.

# UNCOOKED VEGETABLES AND TYPHOID FEVER.

The possible role played by vegetables in the spread of typhoid fever has not in the past received the attention which it seems to deserve. In the consideration of the epidemiology of this disease investigations were for some time directed mainly to water as the usual agent. This has served a useful purpose in showing that outbreaks of typhoid fever are frequently caused by contaminated water and that a sanitary water-supply is a necessity for the welfare of a community. Then attention was focused on milk, which was shown to be a frequent carrier of typhoid fever infection and a not

uncommon cause of both large and small outbreaks. Later the fact that a certain percentage of those who had had typhoid fever continued to harbor the bacillus typhosus in their intestinal tracts and gallbladders, and at times also in their urine, was brought out, and it was found that these chronic carriers might be and frequently were the direct or indirect cause of outbreaks of the disease, and that they are undoubtedly an important factor in the continuance of typhoid fever and the occurrence of prosodemic cases. Recently special attention has been given to direct contact with patients, and with soiled bedding, or clothing, utensils, and dishes, and to the part which flies play in the spread of the disease by becoming mechanically soiled with infectious material and subsequently coming into contact with foodstuffs and beverages.

There are undoubtedly other agencies which spread the disease—that is, serve as conveyers of infectious material directly or indirectly. One of these is very probably uncooked vegetables grown in soil intentionally, and at times unintentionally, fertilized with human excreta.

During the last fifteen years various observers have endeavored to ascertain the length of time the bacillus typhosus would live in soil under many different conditions to which it might be exposed in nature. Firth and Harrocks inoculated ordinary soil with an emulsion of the bacillus typhosus. The soil was not otherwise treated in any way except to add rain water from time to time to simulate the natural rainfall. They were able to recover the organism from this soil for a period of sixty-seven days. soil kept dry and exposed to direct sunlight the bacillus was recovered for twenty days. Levy and Kayser recovered the bacillus typhosus from infected feces which had remained in a vault for over four and a half months, and had then lain as manure in a garden for fourteen days. Robertson inoculated with bouillon cultures of the bacillus typhosus soil at various depths out-of-doors and under natural conditions, and recovered the bacillus after 143 days.

Other investigators have recovered the organism from soil after different lengths of time under various conditions. It has been shown that the bacillus typhosus may survive during a winter in soil, the upper layers of which have remained frozen for at least a part of the time, that it will remain viable for at least twenty-five days in soil dried to the extent that dust is formed, and that the organism will penetrate soil to a depth of eighteen inches when flooded with water and will grow to the surface when buried to a depth of eighteen inches. It may be inferred that these findings represent the average longevity of the organism in soil, or possibly more nearly the minimum, certainly not the maximum.

This suggests forcibly the possibility that salad vegetables grown in infected soil might carry on them the bacillus, in fact that they would in all probability do so. Wurtz and Bourges planted seeds of cress, lettuce, and radishes in soil in pots, then sprinkled the earth with water containing the bacillus typhosus. When the plants sprouted the leaves were examined, and the bacillus recovered from them for three weeks after the earth in which the seeds were planted had been sprinkled. recently Creel has demonstrated conclusively that the leaves of plants grown in infected soil may carry with them the ba-In April, lettuce and radish seeds were planted out-of-doors, exposed to natural conditions as to soil, sunshine, and rainfall. On the second day after planting the seed the surface of the ground was sprinkled with a fecal emulsion mixed with a twenty-four-hour-old agar culture of the bacillus typhosus. After the plants sprouted the tips and leaves were at intervals of two or three days carefully removed well above the ground so that no particles of earth would be taken up. The tips and leaves were then rubbed over the surface of culture medium, or washed with broth and the washings plated. Creel was in this way able to recover the bacillus typhosus from the plants for varying periods, the longest of which was thirty-one days after the infection of the soil, a period, as he states, long enough to enable certain varieties of lettuce and radishes to mature. From the soil itself he recovered the organism for thirty-five days. It is especially significant that the bacillus was recovered from leaves which to the eye appeared entirely free from particles of soil, and that no amount of washing which it was possible to give to the lettuce leaves sufficed to free them entirely of the organism. As vegetables are usually marketed with particles of soil adhering to them, they must be considered as possible carriers of infectious material wherever it is present in the soil in which they have grown.

This work merits attention because of its bearing upon the practice common in many sections of the country of fertilizing truck gardens with night-soil.—New York Medical Journal, June 8, 1912.

### RESULTS OF ANTITYPHOID VACCINA-TION IN THE ARMY IN 1911, AND ITS SUITABILITY FOR USE IN CIVIL COMMUNITIES.

Dealing with this important subject in the Journal of the American Medical Association of May 4, 1912, Russell concludes as follows:

- 1. Antityphoid vaccination in healthy persons is a harmless procedure.
- 2. It confers almost absolute immunity against infection.
- 3. It was the principal cause of the immunity of our troops against typhoid in the recent Texas maneuvers.
- 4. The duration of the immunity is not yet determined, but is assuredly two and one-half years, and probably longer.
- 5. Only in exceptional instances does its administration cause an appreciable degree of personal discomfort.
- 6. It apparently protects against the chronic bacillus carrier, and is at present the only known means by which a person can be protected against typhoid fever under all conditions.
- 7. All persons whose profession or duty involves contact with the sick should be immunized.
  - 8. The general vaccination of an entire

community is feasible and could be done without interfering with general sanitary improvements, and should be urged wherever the typhoid-rate is high.

### THE CARE OF PREMATURE INFANTS.

DURHAM in the Archives of Pediatrics for June, 1912, has this to say on this important subject:

A child born before the twenty-eighth week of pregnancy can live, at most, a few hours; before the twenty-fourth week it may live one to fifteen days; and before the twenty-eighth week usually will die; later than this, with proper care, it will survive. In the period, therefore, between the twenty-fourth and twenty-eighth week of pregnancy, the fetus attains a stage in its development when life and growth are possible if the child is born. Toward the end of the sixth month or twenty-fourth week the average weight of the fetus is 231/2 ounces, and its length 11 to 131/2 inches; its skin has some fat supply; its hair is growing on the head; its eyebrows and eyelashes are present. At the end of the twentyeighth week the weight is 411/4 ounces (2½ pounds) and length 13¾ to 15 inches. The activity in such infants is of necessity very feeble, and very special care is required to raise them. Any child born weighing four pounds or under must be considered to be either premature or congenitally feeble, but the exact determination of its age will be uncertain except in so far as its weight and activity are indications. Especially feeble are the lungs and organs of digestion. The cry is weak and whining; the movements are never vigorous; the muscles of the mouth and tongue may be too weak to nurse, and of deglutition too feeble to swallow. Heat loss is so rapid that it is often impossible to maintain the normal body temperature. The important factors to meet the needs of such infants are; therefore, a supply of proper food; the maintenance of body heat by artificial means; and a sufficient pure air supply for the poorly developed lungs.

In the matter of the food supply it may

be stated that it is essential to have breast milk. One has only to remember the difficulties of adapting artificial food to the normal infant during the early weeks of life to realize the practical impossibility of such adaptation in a premature infant. But the child may be so small as to be unable to nurse on account of physical disproportion, if not of physical weakness; or so weak as to be unable to nurse at all; or the breast milk, as often happens, may be lacking. This latter difficulty may be overcome by obtaining breast milk from the excess supply in a maternity ward, or by taking part of the milk from a wet-nurse who is at the same time nursing her own child. Any attempt to obtain a supply by pumping the mother's breast soon fails because of the almost certain cessation of milk secretion in such cases.

In order to maintain proper heat, greatest success may be had with the ordinary home-made padded crib or box, to the four sides of which hot-water bags may be hung, with an additional one under the baby if necessary. The sides must not be high enough to exclude air circulation. The baby is placed in this box, after being wrapped in cotton, and the temperature is watched by means of a thermometer placed in the box; 85° or 95° F. may thus be readily maintained as required. The box should be placed in a well-ventilated room, or in warm weather may be placed out-of-doors. This device has been shown by many pediatrists to be far superior to many of the elaborate incubators. The child should not be bathed in a tub, nor exposed to the room temperature any oftener than necessary. Oil or cacao-butter rubs aid in maintaining weight and in cleansing the skin.

A few statistics in regard to the subject of premature infants will be of interest.

In 2314 births in Sloane Maternity Hospital there were 410 premature babies, of which number 74 were stillborn. There were, therefore, 336 cases suitable for treatment; 85 were treated as infants at term, and 4 died; 145 were wrapped in cotton and not placed in the incubator, and 12 died; 106 were treated in the incubator. Of the

latter, 29 died in four days (6 being under seven months' gestation), and 77 survived the first four days. Of the latter, one-third were known to be living after a period of from three months to three years. Five of these babies weighed less than three pounds.

In 1902, in the British Medical Journal. is the report of a case of premature infant that weighed two pounds. It was treated in an incubator and lived for ten months, and weighed 6 pounds 12 ounces. It did not survive an attack of bronchopneumonia. In the same journal is published the history of another premature child of 18 ounces (six and one-half months' gestation), treated without incubator, but by being wrapped in cotton. This child, though small for its age, was living at the end of twelve years.

# THE ARTIFICIAL PRODUCTION OF PNEUMOTHORAX IN PHTHISIS BY INJECTION OF NITROGEN.

In the Bristol Medico-Chirurgical Journal for June, 1912, CHITTY deals with this subject.

He considers what are suitable and what unsuitable cases. In cases in which there is active and advanced disease on both sides it would obviously be useless and indeed harmful to throw all the work upon one lung. Attempts have been made, it is true, to compress the two lungs alternately, but, at any rate for the present, we may regard advanced bilateral disease as a chief contraindication. Extensive disease in other organs, especially intestinal tuberculosis, would also be a bar to operation. Of the remaining cases may be considered as specially suitable:

- 1. Those in whom the disease is advanced on one side, whilst the opposite lung is unaffected, slightly affected, or quiescent.
- 2. Those in whom the temperature remains high in spite of the usual methods of treatment, and who show signs of autoin-oculation whenever they take any exercise. Chitty here instances one of his own cases, whose evening temperature for at least a year has been from 99° to 100°, in spite of his having spent a long time at a sana-

torium, and of the fact that at home he had been living in a shelter. His temperature came down to normal within forty-eight hours, and has remained at that level ever since. Numerous similar instances have been recorded.

- 3. Cases which are going downhill in spite of the usual methods of treatment.
- 4. Early unilateral cases for whom sanatorium treatment is not available. Especially does this apply to the breadwinner of the family.
- 5. Cases of severe recurrent hemoptysis. One is often in doubt as to which side is giving rise to the bleeding, but in these cases it would be quite justifiable to compress the worse lung, and, if this had no effect, then to aspirate the gas and repeat the operation on the other side.
- 6. Although most of the recorded cases have been patients suffering from chronic tuberculosis, yet this has not been by any means invariably so, and some cases of acute phthisis have been successfully dealt with.

Laryngeal tuberculosis does not appear to be a bar to the operation. In fact, several recoveries from this form of disease have been recorded. This is easy to understand, as the cessation of cough and of the constant passage of tuberculous sputum over the larynx must be beneficial.

The question naturally arises, "What is the duration of the treatment?" No very definite answer can yet be given. There is little doubt that in advanced cases it must be prolonged for eighteen months to two years; but in very early cases cure has been reported when the gas has been allowed to absorb completely after a few months only. If the treatment has not been sufficiently prolonged recrudescence has been the rule. Under these circumstances it has been found impossible to reproduce the pneumothorax owing to the formation of dense adhesions between the two pleural layers. Therefore when it has been decided to allow the lung to re-expand a careful watch should be kept on the patient. A rise of temperature or any increase in the amount of expectoration would suggest the advisability of keeping

the lung at rest for a few months longer. It is wonderful how readily the healthy portions of the lung will expand and fill the thoracic cavity, even after the treatment has lasted from two to three years.

In discussing the results of treatment we must bear in mind that all, or almost all, the reported cases have been of one type, viz., patients suffering from very advanced disease, in whom other methods had proved incapable of arresting the morbid process, and in whom the mortality would most likely have been at least 90 per cent. Many cases have been too recently published for us to be able to judge what their ultimate fate may be, but undoubtedly the initial results have been full of promise. Certainly well over one hundred cases have, however, been recorded in which the treatment was commenced many years ago, and in these there would seem to have been a permanent arrest of the disease in at least 60 per cent. In many of the recent cases immense improvement has already ensued, and patients who a few months back seemed almost moribund now appear to be on the high road to recovery. Where deaths have been recorded during the course of the treatment they have been due, as a rule, to disease in the other lung, to tuberculous disease in some other part of the body, or to some intercurrent malady. In the few cases in which post-mortem examinations have been made, healing by fibrosis has generally been recorded, though this has not always been evident.

One theoretical objection has been raised to the treatment, viz., that when a spontaneous pneumothorax occurs in a late case of phthisis a fatal result is frequent, but Chitty hopes he has shown this to be quite a specious argument in that the two conditions are in no way comparable. In a spontaneous case there is no regulation of the pressure, and no stopping when symptoms of shock arise. Moreover, the pleural cavity is in direct communication with the lung, and is very liable to become infected from this diseased organ.

Chitty hopes he has shown that this method of treatment has a future before it,

even though it be for only a limited number from out the vast array of the tuberculous. There is plenty of room for experiment and observation, and he trusts that many will give this treatment a trial upon certain selected cases. Risk there may be, but who counts risk when life and death are in the balance?

#### A CASE OF THE HEROIN HABIT.

SYMES in the Bristol Medico-Chirurgical Journal for June, 1912, says that a case has recently come under his care in which the patient was supplied by a medical man with a hypodermic syringe and some heroin hydrochloride tablets to be used for the relief of pain, and was assured there was no danger of contracting a habit from its continued use. The patient, a woman of thirty-nine years of age, whilst staying at a well-known spa, was seized with neuritis in the right arm. As other remedies failed to give relief, the doctor gave a hypodermic injection of 1/12 grain of heroin hydrochloride, and directed that the nurse should repeat the dose whenever the pain recurred. The first effect of the injection was to relieve the pain, but half an hour later vomiting commenced and continued during the night. This was late in 1906. As the pain continued, the injections were repeated. first by the doctor, then by the nurse, and later by a relative, and the dose was gradually increased to 1/4 grain three or four times a day. During the next two years the patient made ineffectual attempts to break off the habit. In 1907 she learned to use the hypodermic syringe herself. From this time the habit gradually became more confirmed, and the dose increased, until at the time of her breakdown, in October, 1911, she was taking between 4 and 5 grains in the twenty-four hours. The daily allowance never exceeded 5 grains.

With regard to the effects of the drug, Symes describes some of these in the patient's own words, an observant woman of education and refinement. Even after the first dose there was "a feeling of excessive fidgetiness, which seemed to creep right up from the very lowest part of the body (the womb), making me so terribly restless that I could not keep my legs still for a moment. This particular feeling increased maddeningly until I had the injection again, when I felt immediately relieved and blissfully comfortable for about two and a half to three hours." It was the recurrence of these feelings which led to the repetition of the drug throughout. Gradually the patient's health began to fail; she became thinner, less able to take physical exertion, depressed The appetite was very poor, and seedy. and she noticed a peculiar salty taste in the mouth when the drug was withheld; occasionally she had attacks of vomiting, and constipation was most troublesome. catamenia became at first irregular and scanty, and finally ceased. She had never been a good sleeper, but since taking heroin this had become much worse, and she had recourse to drugs (chiefly veronal) to in-If the interval between the duce sleep. injections of heroin was too long she "felt wretchedly fidgety and uncomfortable, and people and things seemed to go farther from me as I looked at them, and at times I felt almost light-headed." If the dose was increased too rapidly it gave rise to palpitation and excitement. Amongst other symptoms noticed were increased sensibility to sounds and loss of recuperative power after small injuries, such as cuts; another most troublesome symptom was difficulty in starting micturition. There were never any symptoms of respiratory failure, oppression of breathing, etc. The patient says that whilst taking the drug (although previously extremely subject to colds) she never sneezed or coughed, nor did she ever catch a cold during the whole five years.

The relief given by the injections was instantaneous, but these had to be repeated at shorter and shorter intervals. The patient describes herself as having felt "bucked up," both physically and mentally, keener sensed, calmer, happier in mind, and more ready and able to undertake the exertion entailed by golf, bicycling, roller skating, or walking immediately after taking the drug. There was no marked mental or moral failure. Finally, in October, 1911,

when taking about 5 grains of heroin a day, she was seized with a violent attack of vomiting and prostration with alternately shivering and perspiring. She was unable to move from her bed, and the habit being discovered, an attempt was made to break it off by gradually tapering the dose. Six weeks from the commencement of treatment the dose had been reduced from 5 grains to 4/50 of a grain a day. The chief difficulties had been sleeplessness, restlessness, emotional outbreaks, tachycardia, loss of appetite, and prostration. The patient was at the time walking out-of-doors, and the mental condition was normal. Any attempt to reduce the heroin beyond 4/50 of a grain, although unknown to the patient, gave rise to great discomfort and increased emotional excitement. Symes therefore substituted 1/8 grain of morphine twice a day, and decreased this amount daily. With the substitution of morphine the restlessness disappeared, and by the end of the eighth week hypodermic injections of sterile water only were employed. During the last week of the cure she suffered from a severe cold, the first for five years.

At the present time, six months from the commencement of the cure, the patient is in splendid health, and professes to have no craving for the drug. Sleeplessness, which has been a troublesome symptom throughout the cure, is relieved by the use of adalin, and this drug is still occasionally used.

# EDEMA IN DIABETES DUE TO SODIUM BICARBONATE.

The administration of large doses of sodium bicarbonate for the treatment of the acidosis of diabetes may be followed by the development of considerable edema. Widal has observed an increase of weight of 10 kilogrammes in fifteen days due to this cause. At a meeting of the Société Médicale des Hôpitaux of Paris on May 10 M. Marcel Labbé, M. G. Bith, and Mlle. Fertyk communicated an important paper on this subject. They have seen a diabetic, who was given 40 grammes of bicarbonate daily for a week, increase in weight 8 kilo-

grammes and show edema of the lower limbs. They have found that the increase of weight in such cases is usually rapid and often amounts to 500 to 1000 grammes daily. The increase in weight has a relation to the dose. Under daily doses of 20 to 30 grammes it is slight or absent; under doses of 40, 60, or more grammes it is usually considerable. Patients do not all react in the same way; some are very sensitive to the drug; in others it seems impossible to produce edema. One patient took as much as 50 grammes daily without increasing in weight. On discontinuing the bicarbonate the edema rapidly disappears.

The mechanism of this edema has been disputed. Widal and others, having observed in several cases concomitant retention of sodium chloride, thought that the bicarbonate had an inhibitive effect on excretion of the chloride, the retention of which in turn caused the edema. However, in three cases now reported to the society, in which 40 or 50 grammes of bicarbonate of sodium were given daily to diabetics, analysis of the urine showed no retention of sodium chloride. It seems, therefore, that the retention of the bicarbonate in the body may produce edema analogous to that due to retention of the chloride. Other salts have a similar action. M. Widal has recently shown that large doses of magnesium sulphate may produce edema. The bicarbonate of sodium edema may be produced in other diseases than diabetes. A patient suffering from Bright's disease with anasarca was treated by eliminating chlorides from the diet, and the edema disappeared. As soon as his weight attained equilibrium from 20 to 40 grammes of sodium bicarbonate were given daily. After thirteen days he had gained in weight 3.4 kilogrammes and the legs were edematous. On discontinuing the bicarbonate his weight fell 3 kilogrammes in two days. During this time there was no retention of chlorides. Yet in consequence of the renal disease, he was predisposed to retention of On administering chloride his chlorides. weight rapidly increased and edema of the limbs and face appeared. In five days he

was given 81 grammes of sodium chloride and excreted only 24. On ceasing the administration the excretion of chloride increased and his weight fell.

Pfeiffer has observed that the administration of sodium bicarbonate in patients other than diabetics, and even in health, causes an increase of weight of several kilogrammes. Hayem has reported that in dyspeptics he has seen an increase of weight from administration of the bicarbonate. However, in consequence of the chemical constitution of the body fluids and of alimentary customs, sodium chloride is the chief regulator of osmotic exchanges and the usual factor in edema.—Lancet, June 22, 1912.

# THE ACTION OF SALVARSAN AND NEOSALVARSAN ON THE WAS-SERMANN REACTION.

McDonagh writing on salvarsan and neosalvarsan in the *British Medical Journal* of June 8, 1912, says that taking all the stages of syphilis he has found that three to seven injections are necessary to cure most cases of the disease.

There is no doubt that many cases in the tertiary stage can be cured with neosal-varsan which failed to be cured with salvarsan.

Liable to change as these conclusions may be, McDonagh cannot but admit that the alterations in the Wassermann reaction as the result of treatment are most constant, and when tested at short intervals give a much safer guide to regulate treatment than by saying that just so many injections will be required, or, as the old syphilologists used to teach, that a three years' pill treatment was sufficient for all cases alike.

As there is a possibility of fallacy, Mc-Donagh advises his patients to have a provocative injection of neosalvarsan six months or a year after they have been discharged, and the blood tested forty-eight hours, the seventh, fourteenth, twenty-first, and twenty-eighth day after that injection. McDonagh finally adds that all his cases for some months past have had three to nine injections of salvarsan, given at seven to

fourteen days' interval, or three to seven injections of neosalvarsan, given at not more than seven days' interval, with not a single bad manifestation or a recurrence of symptoms.

### A CLINICAL STUDY OF ACUTE POLIO-MYELITIS.

Under this title PEABODY, DRAPER and DOCHEZ in the Monographs of the Rockefeller Institute for Medical Research of June 24, 1912, have this to say as to treatment:

The general treatment of the acute stage of the disease as regards diet, bathing, catharsis, etc., should be carried on exactly as in other infections. As soon as the children show a desire for a liberal diet, it has been given to them. After they have passed the early acute stage, they are apt to have unusually large appetites. During the acute stage, absolute rest in bed is, of course, a necessity in most cases, but even when the children feel weak it is probably wise to keep them quiet for a week or two after the onset of paralysis. At this early period the most prominent indication for treatment is usually pain. In some instances, as we have seen, pain may be spontaneous, but much more frequently it is associated with movement of the limbs, and this necessitates the utmost gentleness and care in moving or turning the child and changing the bed linen. When lifting or moving a patient with marked hyperesthesia, the nurse should try to avoid flexing the neck or the hips, or bending the spine forward, as these are the most painful motions. Not infrequently this pain is so great that the children develop a dread of being touched, and they cry out long before they are actually hurt. The nurse who realizes that their pain may be intensely severe, whose touch is gentle, and whose voice is reassuring, may do much toward preventing this unhappy state of mind. In patients with spontaneous pain or with tender muscles, the weight of the bedclothes may be sufficient to cause discomfort, and a cradle to raise them off the limbs is often a relief. In other cases a light, well-padded splint seems to steady the limb and to take the strain from unaffected muscles. One of their children used to beg to have the splint replaced when it was taken off.

In general, the most effective simple agent for overcoming pain seems to be heat. This is especially the case in paralyzed limbs which are often very cold and clammy. Wrapping the limb in cotton-wool, blankets, hot packs, and hot-water bags gives great They have frequently had occomfort. casion to notice the effect of cold weather and dampness on these patients, when a sudden change from warm summer weather to a cold rainy day would be accompanied by definite exacerbations of pain. The ward was, therefore, kept at a warm, equable temperature. A certain proportion of cases suffer so intensely that simple measures are not sufficient to control the pain, and drugs have to be resorted to. Bromides they have found helpful in little children. In older patients phenacetine, aspirin, codeine, and occasionally hypodermic injections of morphine are necessary. They have never felt convinced that lumbar puncture was of any therapeutic value. In one fatal case life was apparently prolonged for a short time by means of artificial respiration. Landolt reports a case in which artificial respiration was carried on almost constantly for seventy-two hours. During this period there was a slight return of power in the toes and fingers, but the patient finally died. retically, it would seem that one might possibly tide a person over by artificial respiration until an absorption of exudate allowed the nerve cells controlling the respiratory muscles to resume their func-

During the early part of the disease the most important indication is for complete rest and quiet. When the acute symptoms pass, however, more active treatment directed toward the prevention of deformities and the restoration of muscular function should be instituted. The exact period at which it is best to begin treatment varies, but in general the pain seems to be a good guide. As soon after the first fortnight as the child can bear any movement or hand-

ling without pain, massage should be begun. It is important, although sometimes difficult, to distinguish between true pain and the fear of pain which may persist until the child's self-confidence is restored.

Contractures begin to develop early in poliomyelitis, and it is essential that they should be guarded against from the onset. The most common early deformity to be dealt with is the toe drop, occurring from the contraction of the flexors of the toes and extensors of the foot in the absence of normal opposing muscles. Such a deformity is hastened by 'the pressure of the bedclothes, so that a cradle is useful where it is feared. Sand-bags may be used to support a limb; or a light apparatus, such as a posterior wire splint with a foot-piece at right angles, may be sufficient to overcome the pull of the muscles. Such apparatus must be well padded and the straps applied loosely so that there is no obstruction to the circulation. The danger of the apparatus is that it will keep the limb too quiet and prevent any attempt to use weakened muscles at precisely the period in which both active and passive motions are most to be encouraged. To obviate this, it has been the authors' custom to have the apparatus applied at night only, and to leave the limbs free to move during the daytime.

Massage is a most helpful aid to treatment. They have begun with light massage as soon as the pain would allow, and given it twice daily. Its chief usefulness probably consists in assisting the circulation by replacing the effect of lost muscular activity. Heat, and especially baking, also exerts a good influence on the circulation. massage, passive motion is used, the rhythmic performance of certain movements stimulating the patient to try to attempt them himself. Of all methods, however, by far the most valuable one is active movement, or muscle training. In attempting voluntarily to use a weakened or paralyzed muscle, the patient can accomplish more for himself than can ever be done for him by any one else. Muscle training is comparatively easy to carry out with adults or children old enough to do what they are told,

but with little children, who by instinct avoid the use of any injured muscle, and try only to accomplish the same result by means of another healthy group of muscles, the problem is more difficult. In one way or another, the child must be made to attempt to use the weak muscles. It is here that the skill of the nurse shows itself. By merely telling the child to move on arm or leg, she accomplishes nothing, and as likely as not merely makes him suspicious and obstinate; but by playing with him, coaxing him, inventing ingenious games, which involve the use of muscles, without his realizing it, and by showing infinite patience and tact, the end is obtained. Frequently the children use their limbs better when they are in a warm bath than when in bed. The excitement of the tub bath and the fun of playing with floating toys makes them forget their disabilities, and they try new movements much more readily than in bed. Probably, also, the heat and buoyancy of the water make many muscular movements less diffi-Some children are ambitious, and from the outset are continually anxious to progress, but with many each new step involves a struggle. One literally has to force them to try to sit up, to try to stand, and then to try to walk. Dr. Charles West discusses some methods of stimulating children to use their paralyzed limbs, and then adds, "I need not say that much care and much patience are needed in carrying out any of these suggestions, and not a little of that intuitive love for children which teaches those who are its possessors how to extract fun and merriment from what might in other hands be a most irksome task."

In the therapeutic use of electricity, they assert they have had little experience. To be of any value, electrical treatment must be given with considerable skill and over a long period of time. The amount of other work entailed by the large number of patients they have had in the hospital left them no opportunity to take up this method of treatment. The general methods which may be of service, however, are summed up in the following sentences from the report of the Massachusetts State Board of Health

for June, 1909: "In the early stages galvanism should be used on the nerve trunks and faradism on the muscles, so long as their irritability for contraction is maintained. When the irritability of contraction to the faradic is lost, galvanism should then be used, as having more influence on nutrition. With the returning muscle irritability, faradism should be used, and best by the use of the electrodes over the muscle points so as to obtain actual contraction of muscles rather than by the application of the electrical current to broad surfaces. This serves as a distinct exercise to the muscle during its early stage of weak contraction."

The results of treatment depend to a great extent on the faithfulness with which it is persisted in. Coincident with the absorption of the exudate, improvement is often quite rapid during the first weeks and months; then follows a long period which may be intensely discouraging in its apparent results, a period in which improvement is probably due to muscle training and to the assumption of new functions by the surviving nerve cells. During this period the patient learns many tricks by which surviving muscles may be made to assume in part the rôle formerly played by those which have become paralyzed. A slow recovery often continues for a very long time, and to be sure that the muscles have regained all the power that they are capable of, conscientious treatment ought to be continued for at least a year and a half or two years. The authors have been greatly impressed with the marked improvement which may come after the end of the first year. The problem as to when the case ceases to be a medical one and should be turned over to the orthopedic surgeon is difficult and much discussed. The danger of a too early resort to surgery and mechanical methods of support is that the patient will come to rely too much on these methods and cease developing his muscles to their utmost. Internists and neurologists thus tend to postpone calling in the orthopedic surgeon until they feel satisfied that they have done all in their power. The danger of this delay, on the other hand, is that deformities may set in

which make the corrective problem much more difficult, so that the orthopedic surgeon receives the case at a distinct disadvantage. The best treatment would probably mean a coöperation in which the surgeon would foresee and correct deformities and the internist would protect the interest of the injured muscles.

When one member of a family is taken sick with poliomyelitis, the physician must take what measures he can to prevent the spread of the disease to other members of the family and to the community at large. Strict isolation of the individual case and isolation of those who have been in close contact with it during the fortnight preceding onset are the most efficient measures. This is particularly important in regard to the prevention of contact with children. Attendance at church, school, or other places of public meeting should be forbidden for at least three weeks. As direct treatment for those exposed, urotropin, which by animal experimentation has been shown to have some slight action in destroying the virus, may be given for about a week. Longer administration is not advisable. Nasal and throat sprays or a gargle of one-per-cent peroxide of hydrogen or of a 0.5-per-cent menthol solution should be used, but only for a few days, for their prolonged use is irritating and may make the throat and nasal passages more susceptible.

# THE X-RAY TREATMENT OF GRAVES'S DISEASE.

HOOTON in the British Medical Journal of June 8, 1912, writes on the x-ray treatment of goitre.

Summing the whole matter up one may say that the noteworthy features are the lessening, often rapid, of the nervousness, the dyspnea, the tachycardia, and the tremor; the patient's weight increases, and there is a return, in a greater or less degree, to a normal enjoyment of life.

One defect undoubtedly did, and to a smaller extent still does, exist—namely, the soreness of the skin of the neck, a true radiodermatitis, present as a rule only for a few weeks during the earlier part of the treatment, but unfortunately giving place to a permanent brown stain and patches of dilated capillaries, which to those who wish to wear low-necked dresses is necessarily a great disadvantage. These difficulties, however, are being overcome by filtering out the softer rays which are responsible for the mischief to the skin; and after all, according to Hooton, this is not a great price to pay for relief from a distressing disorder.

### RICE IN THE DIETARY OF THE DIA-BETIC.

The *Medical Record* of June 29, 1912, contains an article by STERN on this subject. He reaches these conclusions:

- 1. Rice—i.e., the "polished" product of commerce—furnishes substantially nothing to the organism besides an easily digestible starch. Given in suitable amounts this starch is practically all absorbable and ready to serve as a calorifacient.
- 2. The commercial cereal is therefore peculiarly adapted to supply carbohydrates without any protein or mineral admixture of consequence.
- 3. This deficiency of protein and mineral substances makes rice an indifferent food so far as the formation of toxic protein products and useless or impossible pancreatic, cardiac, and renal activities are concerned.
- 4. The mineral and protein deficiency of rice facilitates the reduction of salts and the calculation of absorbable albumin necessary at every stage of the diabetic affection. (The elaboration of proteins from cereals and leguminous seeds by the healthy organism is mostly incomplete; it is impossible, or nearly so, in every case of advanced diabetes.)
- 5. Rice being nearly entirely absorbable, only a comparatively small quantity of it is needed by the diabetic organism; it is not the purpose of the rice to supply the total food requirement as does v. Noorden's standard oat diet; the cereal may be incorporated with any properly adjusted proteinfat combination.

- 6. Contrary to the oat diet, rice as a single form of carbohydrate and in suitable combination may be employed by the diabetic for more protracted periods; it may be prepared in a number of different ways and forms that prevent monotony and always furnish a palatable dish for the patient.
- 7. Sixty grammes of the absorbable starch granule of rice generally produce the antiacetonemic effect of 250 grammes of the but partly absorbable oats in the standard admixture.
- 8. Pronounced cases of acidosis are frequently suppressed by the ingestion of 100 grammes of rice.
- 9. The amount of rice requisite to depress the acetonuria does not necessarily increase the intensity of glycosuria. In a large number of cases the glycosuria will even temporarily decline in a marked degree.
- 10. The modus operandi of rice is different from that of cereals rich in cellulose. Practically all the rice is absorbed and a certain amount is assimilated by the diabetic (this is evinced by the frequent increase in weight and vigor of the patient and the diminished glycosuria and acidosis), while material rich in cellulose, no matter how much albumin and fat may have been added to it, furnishes in effect nothing more than a starvation diet.

# PNEUMOTHORAX AS A CURATIVE FACTOR IN PULMONARY TUBERCULOSIS.

SMALL discusses this topic in the Pennsylvania Medical Journal for June, 1912. He says as to the selection of cases that it is generally agreed that patients not improving or being cured under rest, open air, and forced diet, those in whom cure is arrested, and those not maintaining the improvement gained under such régime, are the ones to be selected. Generally those unilaterally affected are chosen, though a double involvement is not always a contraindication. The amount of gas injected, of course, varies with conditions met. Usually the first injections require from 500 to 1000 cubic

centimeters of the gas. The degree of compression varies with each case and is determined by the manometers connected with the apparatus.

Before attempting to compress a lung, the functional capacity of the other lung and the effect that the increased respiratory demands will have upon it must be carefully estimated. It is not so much the extent as it is the nature and location of the process in the second lung that will determine the advisability of attempting compression. One lung may be compressed more safely when a much greater portion of the second lung is in an old, dry, cicatrized condition than when it is involved in a wet, pneumonic process, and apical lesions are not so dangerous as those situated centrally.

The technique of making nitrogen injections into the pleural cavity is as follows: Choose a spot for making the injection over an area where the breath sounds and resonance are best, in as wide an intercostal space as possible, avoiding the heart, the diaphragm, and the thicker muscles. Forlanini's method is to place the patient so that the selected site for injection comes uppermost, and arrange the arm so as to widen the intercostal space. Disinfect the skin with tincture of iodine and freeze with ethyl chloride. A fine hypodermoclysis needle may then be thrust through the chest wall until the pleura is felt to yield. Connect the needle with the manometer. there are no excursions the needle is plugged or is in the lung or in a blood-vessel. If for any reason the fine needle is not satisfactory. Murphy advises making a small incision just large enough to admit a medium-sized aspirating needle with a slightly blunted point. As the pleura is felt to yield, air will be sucked through the head of the needle if there are no adhesions. If this sound is not heard the needle is stopped up or in the lung. The needle is then connected with the manometer, and if there are no excursions a new attempt must be made. The safest and most reliable method is that of Brauer, who makes an incision sufficiently long to afford a good inspection of the pleural surface after the tissues are retracted. If the pleura is glistening and smooth and the motions of the lung are visible, he punctures the pleura with a blunt needle carrying a fine catheter with which the pleural layers may be explored. When satisfied as to the existence of the pleural cavity, the needle is connected with the manometer. After the nitrogen has been injected, the incision must be closed by carefully suturing each layer of tissues. The after-fillings are made by using a fine needle without an incision.

The quantity and frequency of the injections vary with each case. When there are no adhesions and the heart action is good, larger quantities at longer intervals may be given. If the heart is weak the pressure should be kept as low as possible and the injections given just often enough to maintain the standard desired. It may not be advisable to raise the pressure much until the heart is found to be equal to the task. When the patient is not incommoded by the pressure, seven or eight cubic centimeters may not be too much. Each case is a law unto itself and the proper standard of pressure must be determined for each individual, and then maintained by giving the proper quantity at the right time. If too much nitrogen is introduced under too high a pressure, the nitrogen may escape back through the track of entry and appear subcutaneously as an emphysema, or it may infiltrate beneath a muscle and lift it up.

One author summarizes as follows: There are hopeless cases of pulmonary tuberculosis in which the patients cannot recover by ordinary methods of treatment under the most favorable circumstances. There are also patients that are unable to hold their recovery after it has been made, In these cases if the lung can be compressed and kept so for a sufficient length of time recovery will usually follow. In fifty per cent of advanced cases treated by compression the patients have been reported as permanently cured. The course of recovery is The certainty and helpful subjectively. precision of the method permit a great deal of liberty, and the sense of security gives buoyancy to the patient.

# ACUTE INFECTIVE PROCESSES DUE TO THE STREPTOCOCCUS.

BALL discusses the value of vaccines under this title in the *Lancet* of June 8, 1912.

From the remarks made in connection with various series of cases reported by him it is evident that certain facts can be deduced, although it is impossible to give a criterion as to the value of any particular form of treatment, and especially so when such involves the use of a drug. grounds on which Ball lays a claim as to the value of vaccine therapy are as follows: (1) The effect that it has on the course of the temperature chart; (2) the prevention of recurrences in conditions in which they are common; (3) the improvement in the signs of the local disease; and (4) the change for the better in the general condition of the patient.

Taking the first of these, there seems to be quite enough evidence to justify the statement that vaccines do have some influence on the course of the fever in a case of acute infection due to the streptococcus, provided that the original lesion has been efficiently dealt with by surgical methods. The best example of this effect is seen in the type of case in which the patient is in a condition of unstable equilibrium, in which it is necessary to apply some extra stimulus to turn the balance in a favorable direction. The result of the inoculation of a suitable dose of vaccine under these circumstances seems to be almost instantaneous, and it oftentimes happens (in twelve cases of his series) that the temperature falls to a normal level, by crisis, within a period of twenty-four to forty-eight hours after a single inoculation. That such should occur in so large a proportion of the cases tends to negative the suggestion of coincidence which is put forward in isolated instances. In the majority of cases the change has not been so striking, but similar results are seen with a second or third inoculation. Even in those in which a prolonged course of injections are required, some influence on the course of the fever can be indicated, for the gradual fall commenced from the time when the

treatment was instituted. The variety of these changes probably depends on different factors. In the first place, it is extremely difficult to acquire an accurate knowledge as to the degree of infection from which the patient is suffering, owing to imperfections in both clinical and bacteriological technique; as a result of this the size of the dose of dead microörganisms that should be injected is difficult to estimate. Yet, again, the virulence of the infecting agent plays an exceedingly important part in the disease, and to a certain extent is responsible for the potency of the vaccine which is used. This being so, the size of the dose of the initial inoculation must necessarily vary with each individual case. Up to the present time we have no reliable means of estimating this most important factor. Taking these two factors by themselves it will readily be realized that considerable discrimination is required in the use of vaccines.

Turning to the second point—namely, the prevention of recurrences in conditions in which they are liable to take place—there is ample evidence to justify the use of this sign as to the value of these agents in the treatment of acute streptococcus infection, for on no less than six occasions in which such conditions were treated the reappearance of the lesions was prevented in every instance as the result of the initial injection; in some of them as many as from eight to ten times have the lesions presented themselves. This surely is a tribute which must be beyond dispute.

Yet, further, in those cases in which a recovery was made, without bias it may be said that in the majority the change for the better depended on the institution of this form of treatment. It is true that on many occasions no effect was observed, but the disappearance of delirium, the sudden interest in environment, the diminution in the production of pus, and the rapid healing of wounds, all speak for themselves. Even in those cases in which a recovery was not made some temporary benefit seemed to be derived, exemplifying the stimulant effect for which these agents are notorious in

other conditions than those which are being discussed.

On these points depends Ball's hypothesis that vaccines are of some value as adjuvants to surgical methods in the treatment of acute infections. It is not his intention to urge their value in preference to many other forms of treatment that come into our hands, or to emphasize the fact that in some instances patients who have streptococci circulating in the blood stream, sometimes in large numbers and of considerable virulence. have recovered from their maladies. although five patients out of nine lived in whom such a condition was present, it is a known fact that such may occur without the adoption of treatment of this type. certainly a fact of some significance, but not of so much value as the changes to which reference has been made. Even the finding of microörganisms in large number by the technique indicated does not appear to add to the significance of this sign, for in two instances the streptococcus was isolated from a single drop of blood, yet the patients recovered, whereas it was only demonstrated in 1 Cc. in scanty numbers in others and the patients died, presumably the virulence of the microörganism playing a much larger part in the destruction of the machinery of resistance than the actual numbers present.

Ball then adds a few remarks with regard to the value of serums. In the majority of cases in which use has been made of them the results have been disappointing, an experience common to most observers. Various types have been tried, as already mentioned. The antipyogenes variety certainly appears to have been the most effective in cases in which the streptococcus pyogenes was the microörganism of infection, as might naturally be expected of a serum which is of the autogenous type, or at least the nearest approach to it that we are able to obtain. The changes in the course of the temperature per se are very slight, and if occurring at all have only been of a temporary character. At the same time, in the literature many remarkable records can be found, including such conditions as re-

covery from post-mortem wound infections of a severe character, septicemias of various types, and erysipelas. This latter disease is one in which the best results are quoted as having occurred. It is true that many remarkable changes do happen in this condition whatever form of treatment may be adopted. It has been used in thirteen cases that Ball has seen during the last two years, the temperature falling to normal within twenty-four hours in eleven of them. In one no obvious effect was noted, and in the other, which is among those which have already been mentioned, recurrences of the condition were not prevented, and only stopped after the use of vaccine therapy. All of these recoveries were made in lesions of the mildest form of the disease, the severe conditions being selected for vaccine In puerperal septicemia, again, much use has been made of this form of treatment, but on the whole the general opinion held is that its value is very small indeed.

Certain points of interest have been observed during the course of treatment. One of these was seen when the serum was injected in combination with normal saline solution intravenously. Within from half an hour to two hours as a rule a rigor occurred, usually of a severe character. This seemed to contraindicate the use of this method until it was discovered that the rigor depended on the action of the distilled water used in diluting the saline, for after this was replaced by freshly distilled water the condition was prevented. This is a point of some practical significance. condition of anaphylaxis is one also which must be borne in mind, for symptoms which are the result of allowing an interval of from two to three weeks to elapse between successive doses of serum may be of a serious nature. None such occurred in Ball's series. although such an interval was allowed on more than one occasion; at the same time, the knowledge that such may occur contraindicates the haphazard use of this agent.

Yet one other point is the absence of any sign of serum disease in any of the cases.

In conclusion, Ball indicates what in his opinion is the ideal method of approaching a case of infection due to the streptococcus.

First, the clinical diagnosis should be accurate to the smallest detail, the signs and symptoms being carefully noted both as regards the local and general condition of the patient. The help of the bacteriologist should be sought for in all cases, however trivial they may appear to be in the early stages, and as soon as it is recognized that he can give some information both as to diagnosis, prognosis, and method of treatment.

Having dealt with the lesion surgically the necessity for the use of the artificial methods of stimulation of the machinery of resistance must be discussed, and if decided on it must be requisitioned as soon as possible

Serum should be given at the earliest possible opportunity for its action to be effective. It can be used locally as a dressing, intravenously, subcutaneously, or by the rectum. Intravenous inoculation in combination with normal saline solution should be used where it is desired to get a rapid effect. The doses should be as large as 75 to 100 Cc. and repeated if necessary. This should be followed by subcutaneous injections of 50 to 100 Cc. per diem. type of serum that should be used is that which most nearly approaches the autogenous variety. The serum obtained from the blood of a patient who has recovered from an acute streptococcus infection has been successfully utilized in the treatment of a similarly infected patient on more than one occasion, and still further, friends have been known to artificially immunize themselves against the microorganism causing the disease, and submit to a withdrawal of their own serum.

Following the use of the serum, or in combination with it, a vaccine should be injected as soon as it has been prepared. As a general rule an autogenous agent is preferable for the reasons already given, but it may be replaced by one prepared from a mixture of streptococci of the same type which are known to commonly cause the

type of lesion from which the technique used has failed to isolate it. Moreover, stock vaccines may be used during the preparation of the autogenous Should a mixture of different bacteria be found in the lesion a vaccine prepared from such a mixture is always indicated. With regard to the dosage it is impossible to lay down an absolute rule. There are indications that if a patient is seen in the very earliest stage of the disease, and maintains a good general condition while the focus of infection is still localized, then a relatively large dose of vaccine may be given; but, on the other hand, if the general condition is bad, and the lesion is becoming generalized, then a small dose is indicated as the initial inoculation. In other words, the more acute and the more generalized the lesion the smaller should be the dose introduced. Having obtained no effect as the result of the smaller dose it should be increased gradually until such is reached which will produce the desired reaction. On the other hand, if a harmful effect is observed then a smaller dose is indicated, or even vaccine therapy contraindicated.

If this course be adopted then Ball believes it will be realized that vaccine therapy and serum therapy are at least useful adjuncts to our ordinary methods of surgical treatment, not only in those cases in which these have failed, but as a routine.

### THE INFLUENCE OF SODIUM CHLOR-IDE UPON THE HYDROCHLORIC ACID OF THE GASTRIC JUICE.

FLOERSHEIM in the Medical Record of June 8, 1912, says that statements are current that sodium chloride instilled into the human economy acts as a factor in increasing the production of hydrochloric acid in the stomach. Abstinence from salt would therefore be followed by a material diminution of the hydrochloric acid in the gastric juice, while imbibition of it would be followed by increased acidity. It is a generally accepted fact that the hydrochloric acid is derived from the chlorides in the blood circulating in the stomach mucosa. It need not necessarily be the sodium salt that is

required, but it is the most serviceable, readily attainable, and easily transformed. If this assumption is correct we should have a method of treatment for increased or decreased HCl acidity of the gastric fluid which would commend itself for its simplicity, its adaptability, and its cheapness.

Again, in excessive HCl, with or without excess of fluid secretion, the most potent, universal, cheap, and efficient remedy, sodium bicarbonate, is an excellent temporary measure. In a number of cases (without carefully searching for the etiology) a cure is effected. In administering the bicarbonate of soda as an antidote we at the same time, according to the above statement, place within the affected area the exciting cause that is believed to bring on this very condition which we are attempting to cure or relieve.

For the past few months experiments have been undertaken to determine the influence upon the HCl of sodium chloride when taken in the stomach by mouth and in the rectum by proctoclysis. number of patients, eight were taken for experimental purposes, four in whom the free HCl of the gastric contents registered persistently above 80 per cent, and four in whom the free HCl was observed to be constantly below 15 per cent. In the hyperacid cases salt was omitted from the diet, while in the hypoacids it was allowed to be taken by mouth and a number of times by proctoclysis. No other form of treatment was instituted and the usual mode of living was advised.

In the beginning of the experiments each patient was properly prepared for the ordeal. The usual Ewald test meal was given and routinely examined every fourth day. Five tests were made in each subject. It was constantly noted that in the excess HCl secretion there was no appreciable diminution of the acid content in the aggregate (variations with each test meal were observed); likewise in the low free acid cases there was no conclusive or sharp increase of free HCl secretion.

The reverse experiments were then undertaken—i.e., salt and salines in the cases of excess, and practical exclusion of them

in the subacid cases. Again it was noted that the results obtained did not warrant the assertion that salt per os or saline proctoclysis was followed by increased acid secretion in the gastric juice.

In three of the hyperacid cases bicarbonate of sodium was administered for experimental purposes. In two of the cases the HCl became at each examination materially decreased, while in the other case there was no specific change noted. General states, neurasthenia, diabetes, lithemia, and other metabolic, arterial, or nerve conditions, were neither considered nor treated.

It would seem, therefore, that the introduction of sodium chloride into the system has no special influence upon the production of hydrochloric acid by the stomach.

It may justly be argued that the number of cases taken is small, yet it should be considered that the experiments were made upon subjects taken at random from quite a number without being specifically selected, which would otherwise probably give the unusual occurrence. Floersheim's belief has always been that which has been brought out by these experiments, and in the treatment of deficiencies or excesses of HCl he does not advise a change from the usual in the salt element.

# THE EFFECT OF EXTENSIVE RESECTIONS OF THE SMALL INTESTINE.

FLINT (Bulletin of the Johns Hopkins Hospital, May, 1912) draws the following conclusions:

As much as 50 per cent of the total small intestine in dogs may be removed without fatal results. The animals may gradually return to a condition of practically normal weight and metabolism when maintained on the favorable diet under good conditions. Resections of 75 per cent and even more of the total small intestine may be survived, but such animals are not liable to show a true recovery—i.e., a return to normal weight with the establishment of a good compensatory process.

At first the animals suffer from a severe diarrhea, ravenous thirst and appetite, and loss of weight, from which they gradually recover until conditions may return to those of a normal animal. They remain, however, extremely sensitive to unfavorable conditions of diet and living.

Metabolic studies on such animals show that there is a marked increase in the excretion of the nitrogenous, fatty, and carbohydrate elements of the food. elimination may reach 66 per cent of the diet content. After compensation is established, on a rich, easily assimilated diet. digestion goes on as in a normal dog, except for an increase in the amount of intestinal putrefaction, as indicated by the amount of indican in the urine. An increase in the amount of fats in the foods may lead to an increased elimination of nitrogen and fats to a point about 25 per cent above normal. The carbohydrates, on the contrary, are absorbed to a degree considerably above normal after the compensation is established.

The compensatory process consists in a hypertrophy as well as hyperplasia of the remaining portion of the small intestine. There is no regeneration of either the villi or crypts. Computation makes it probable that in favorable cases approximately the original epithelial area of the intestine is restored by the hypertrophic process.

As in animals, about 50 per cent of the small intestine may be resected without much danger of serious consequences in the majority of cases. The resection of smaller amounts may, however, be followed by severe metabolic disturbances, and even inanition and death. Human cases behave in general like the animals. They show similar metabolic disturbances. In one case there was distinct evidence of a compensatory process. No regeneration or hypertrophy has ever been reported in a human case. There are over fifty-eight cases reported in the literature where over 200 centimeters of the small intestine have The mortality is 16 per been resected. cent, which is probably much lower than it should be, owing to the greater probability of successful cases finding their way into the literature.

The metabolic disturbances in human cases bear no definite relationship to the amount of small intestine resected. Five resections of over 400 centimeters have recovered, while death from inanition has resulted from the resection of 284, 289, 300, and 350 centimeters, respectively. found digestive disturbances have resulted from the removal of 192 and 204 centimeters of ileum. In human cases, factors like difficulties in measurement, the pathological condition, the total length of the intestine, and the resistance of the patient undoubtedly modify the result, and explain the apparent discrepancies between the amount of intestine resected and the subsequent metabolic disturbances.

The prognosis in human cases should be guarded. Apparently successful resections may, for lack of suitable compensation, succumb ultimately to a slow process of inanition.

The experiments and the series of human cases emphasize the specific function of the three segments of the gastrointestinal tract. Neither the stomach nor colon is able to compensate for the loss of large portions of the small intestine.

Resection of the human intestine is almost never an operation of choice. The surgical rule has been, and will continue to be, a resection of the minimum amount allowed by the pathological conditions. From the metabolic studies, it would seem wise to give these patients a rich and easily assimilated diet, poor in fats and relatively rich in carbohydrates.

### THERAPEUTICS OF SOME SKIN DIS-EASES.

HARDAWAY (Journal of the Missouri State Medical Association, May, 1912) notes that there is very little trouble in killing the itch mite with sulphur or other parasiticides, but it is sometimes rather difficult to cure the patient's skin after he has been cured of the scabies. In other words, the treatment is generally by far too drastic, and results in a severe dermatitis with, perhaps, great suffering, and from

which the patient may be weeks in recovering.

In practice he commends the following plan:

The patient is directed to take a hot bath at night with moderate frictions of green soap, preferably Bagoe's; on retiring he is to apply the following ointment, and to repeat it morning and evening for three days—that is, for six rubbings altogether:

R. Sulphur præcipitati, 3iij-vj; Balsami Peruviani, 3j; Vaselini, 3iij.

M. S.: Rub in one-half ounce night and morning.

The druggist is ordered to furnish the patient with a half-ounce box as a measure.

The salve should be well worked into the skin, particularly in those parts where the eruption is most profuse. The face should be carefully avoided; in fact, the hands should be washed after these manipulations to avoid any contact of the sulphur with the face or eyes. It is best that the patient should put on fresh underclothes and lie between clean sheets before beginning the treatment, but he should make no change until the course is over.

If the treatment has been begun at night, the sixth, or final, rub will occur in the morning; at bedtime a second hot bath with green soap frictions is taken, the patient. gets into clean clothes, and his bed-linen is For perhaps a week longer a renewed. small amount of the same salve may be rubbed in at night at itching points. In the pruritus, if general, a sort of habit pruritus, a zinc lotion with a small amount of carbolic acid may be prescribed. It is absolutely essential that the underclothing and sheets be boiled, else reinfection is more than probable. The outer garments may be ironed with a hot iron.

If the ointment is not properly prepared—that is, absolutely free from all grittiness—it will do more harm than good, and this is true of any kind of salve that may be ordered, but particularly true of salves containing sulphur. The physician should himself see to this important matter.

Sycosis vulgaris, or folliculitis barbæ, is an extremely obstinate disorder, and in spite of the x-ray and vaccinotherapy and the older local applications, many cases resist all of our efforts to bring about even temporary amelioration.

So soon as the acute symptoms have subsided, all authorities agree that shaving daily, or at least every second day, is a sine qua non of successful treatment. In treating sycosis it is necessary that the ordinary shaving brush and soap be discarded, that a cream rubbed in by the fingers should be used instead, and that the razor, etc., should be thoroughly sterilized. If these precautions are not observed, reinfection is bound to occur, and our best efforts are wasted.

In sycosis of the upper lip it is of course necessary to treat any nasal discharge by appropriate applications.

In subacute or chronic types of sycosis, Rosenthal's paste gives very good results:

- R Acidi tannici, gr. lxxv; Sulphur præcipitati, 3ijss; Zinci oxidi, Pulv. amyli, ää 3iij; Vaselini, 3ijss.
- M. S.: Apply twice a day.

It may also be mentioned in the interest of asepticism that the paste should not be taken out by the patient's finger, but removed by a bit of stick or tooth-pick, and then applied to the face with the finger, and smeared on in a thin layer without rubbing.

Sometimes this paste, even modified in this way, is too thick, and should be softened with a little oil of sweet almonds.

Impetigo contagiosa was at one time almost entirely confined to children, but it is now seen far more frequently among adult males, who get it from the barber shop, where it has found an apparently permanent lodging place.

In the interest of the public health the patient should not be allowed to return to the barber shop, but should shave himself, using the same precautions mentioned above.

Almost any weak parasiticide is effective, but it is well to remember that the crusts of the lesions should first be removed, and the salve thoroughly applied.

In a considerable number of instances carbuncles find their origin in the barber

shop. When we recall the intimate contact of the barber with his subject, and the usually utter neglect by the former of surgical cleanliness, it is not difficult to understand that there exist many opportunities for infection. It is a noteworthy fact that women, who do not frequent barber shops, rarely suffer from carbuncles, although, of course, they are not altogether immune. In the majority of cases in men the carbuncles occur mostly on those parts of the body most exposed to infection—e.g., the nape of the neck, and not so infrequently the bearded face.

It is equally true that chronic furunculosis of the back of the neck is due, in many cases, to the barber's fingers and the utensils of his trade.

Acute attacks of urticaria are usually due to some irritating food, or some food for which the patient has an idiosyncrasy, and should be treated by giving an emetic and later an aperient. When sour fruit is the cause of the outbreak Whitfield gives at once 30 grains of calcium lactate in 2 ounces of anise water.

There is a treatment of great service in those cases of acute urticaria that are kept up by repeated exacerbations, last for several days, and induce the most exquisite local and general suffering. Internally it consists in the administration of 5 or 10 grains each of powder containing subcarbonate of bismuth and carbonate of magnesium every three or four hours, coupled with the liberal drinking of Vichy water, which should be fortified with a pinch of sodium bicarbonate on each occasion that the Vichy is drunk.

The local application of menthol, carbolic acid, tar, etc., gives at least temporary relief. When carbodlic acid or the tincture of mineral tar is used, it acts best when sprayed on with an atomizer:

- R. Phenolis (vel. tinct. picis mineralis), 5ij; Glycerini, 3ss; Aquæ, q. s. ad 3xvj.
- M. S.: Mop on with a rag or use as a spray.

A prescription containing menthol and carbolic acid added to zinc lotion (non-sprayable) is appended:

Mentholis, 3j-ij;
Alcoholis, q. s.;
Phenolis, m. xx-x1;
Zinci oxidi, 3iv;
Pulv. calaminæ præp., Div;
Glycerini, 3ij;
Liq. calcis., 3ij;
Aquæ, q. s. ad 3viij.

M. S.: Mop on with rag.

McIntosh's cream is sometimes better borne than any form of lotion:

Bismuthi subnitratis, 3ij;
 Zinci oxidi, 3ss;
 Glycerini, 3iss;
 Phenolis, m. xx-xxx;
 Vaselini, 3vj.

M. S.: Apply with finger or brush.

# DIAGNOSIS AND TREATMENT OF SCIATICA.

WATSON (British Medical Journal, April 27, 1912) in his classification of sciatica divides the affection in the following manner:

A. Primary group: (1) Sciatic neuralgia. (2) Sciatic perineuritis. (3) Sciatic neuritis.

## B. Secondary group.

The primary group includes sciatic neuralgia. This is supposed to be a functional trouble not associated with definite inflammatory change in the nerve trunk, the condition being purely functional. It occurs most frequently in flabby, anemic, debilitated women, being apparently an expression of nervous exhaustion. Occasionally it is associated with dysmenorrhea, or irregular menstruation. He has seen it alternate with facial neuralgia. The pain is intermittent and the patient may be quite comfortable between the attacks.

Sciatic perineuritis or neuritis is a disease of adult life, and in the writer's experience four times as common among men as women. There is almost invariably a gouty or a rheumatic history. In fully developed cases there is muscular atrophy, paresis and reactions of degeneration are present, with diminution of tactile sensibility, areas of anesthesia and hyperesthesia, tinglings, pins and needles, formication, etc.

The exciting cause of the hyperacute attacks is usually exposure of a limb to cold and wet.

The secondary group of cases includes all those in which the condition is due to involvement of the sciatic nerve, by pressure or the spread of inflammatory processes. Hence the importance of making a complete and systematic examination before diagnosing primary sciatica. stated that a rectum overdistended with scybalous masses sometimes exerts sufficient pressure to give rise to sciatica, but whether this be so or not, it is at any rate quite sufficient to aggravate the condition if already present. It includes those cases of sciatica due to tuberculous or osteoarthritic disease of the spine, bones of the pelvis or hip-joint.

As to treatment, rest in bed is essential and a water-bed is advisable, the sheets being either of wool or cotton and not of linen. Woolen socks and pajamas should The author usually fixes the limb with a long Liston splint, which adds greatly to the comfort of the patient when he has become accustomed to it, and does away with the startings, which are such a painful feature of the disease. Should this prove unsatisfactory, it should be slung in a fracture cradle. The limb should be kept very warm, preferably swathed in cottonwool. A dose of calomel should be given, followed by a saline in the morning. Salicylates in combination with the bromides and tincture of gelsemium answer well. Aspirin appears to have a specific effect in relieving the pain of fibrositis; and pyramidon, exalgin, acetanilide, and phenalgin are worthy of mention. Potassium iodide is a most valuable remedy, more particularly in chronic cases, especially when combined with the glycerophosphates. Tonics (iron, arsenic, strychnine, etc.) are very necessary when the acute symptoms have subsided.

Regarding local treatment, many pin their faith to fly-blisters; the disadvantage of these is that if not effective they interfere in a measure with the adoption of other methods of treatment. Hot linseed poultices, antiphlogistine, a canvas bag containing mustard bran, electra cloth applied along the course of the nerve, are all good methods of counter-irritation.

Anodyne colloid is excellent for relieving local pain, and morphine is given when required. Cocaine is extremely valuable administered hypodermically in doses of 1/10 to ½ grain. It should be injected at the seat of pain, but not into the nerve. The balneological and electrical treatment receive detailed attention. High-frequency and sinusoidal current are indicated without very clear indications as to the selection of each, as are massage and douching and passive movement. Stretching is advocated as a last resort. As to further treatment, the patient is especially cautioned against sitting on a cold seat of a draughty water-closet; indeed, he is advised to use a felt cover.

### SALVARSAN AND THE WASSERMANN TEST IN SYPHILIS.

Heidingsfeld (New York Medical Journal, May 4, 1912) concludes that though salvarsan is not an unfailing remedy, it is by far the most effective present-day agent which we possess for the treatment of syphilis. It effects an apparent clinical cure, with negative Wassermann reaction, in about 80 per cent of the cases treated. A fair share of the remaining 20 per cent, with the aid of mercurials and repeated administrations, give promise of still proceeding to a negative Wassermann test in due course of time. Salvarsan fails utterly in probably more than one per cent of cases.

From the writer's personal experience, salvarsan cannot effect any material harm and can safely be administered in ambulatory practice; the administration of salvarsan has not been followed by complications on the part of the ocular and auditory apparatus, with possibly one exception. In this instance it was probable that syphilis and not salvarsan was the causative factor, inasmuch as the Wassermann test remained strongly positive in character. Readministration of salvarsan did not aggravate but apparently cleared up the condition. The

Wassermann complement fixation is the oracle and mentor in syphilis diagnosis and therapeusis. The diagnosis and treatment of syphilis without Wassermann control and other specialized aid must be unscientific, and in a large degree unsatisfactory in character.

CAMPBELL and PATCH (Canadian Medical Association Journal, May, 1912) as the result of two thousand reactions carried out in the last two years, state that they have never obtained a positive in non-syphilitic cases. Boaz in his series of 1064 cases obtained only one positive, a case of scarlet fever which was transitory, this being but one out of 66 cases of scarlatina.

In the primary stage the reaction is found on an average between two and three weeks after the appearance of the primary lesion, or six or seven weeks after infection. It is advised to make frequent serological examinations in cases of supposed chancroids.

In a considerable number of cases syphilis has been thus diagnosed before the appearance of secondary symptoms. At times true chancroids exhibit a suspicious induration. In the absence of the spirochætæ a persistent negative reaction enables us to eliminate syphilis. The period of secondary lesions gives practically 100 per cent of reactions. As to the value of the negative reaction in doubtful cases, it was formerly believed, and is still held by many, that a negative reaction is valueless. Untreated cases, resembling secondary syphilis, and giving a repeated negative Wassermann reaction, are in all probability not syphilitic.

In tertiary syphilis the reaction is practically a constant one in untreated cases. Hence the persistent absence of reaction in such cases of presumably tertiary syphilis renders the diagnosis of spirochætal infection highly improbable.

In latent syphilis only a positive reaction is of any consequence. The older the syphilis the more difficult it is to eradicate it. The rapidity of the disappearance of reaction varies with the rapidity and efficiency of treatment. The more intense the reaction the longer it takes to disappear. The older the syphilis the more difficult it is to eradicate it. The shortest time of disappearance

of a positive reaction has been, in a primary case, two weeks. The average time taken for the disappearance of the reaction is between five and six weeks after salvarsan treatment.

The Wassermann reaction seems to show that salvarsan is more efficacious than mercury, and that potassium iodide has little or no influence upon a positive reaction.

A positive reaction is a symptom of syphilis, and must be treated like any other ordinary clinical symptom if results are to be achieved. The findings of Boaz from an experience of recurrences have shown this in a most striking manner; seventyfour cases of syphilis which had been treated until symptoms disappeared and the reaction became negative, and on whom serum examinations were made regularly, later developed positive reactions. One group of twenty-four was left without treatment, while the larger group of fifty was treated immediately. Of the treated cases only three developed any clinical signs, these subsiding quickly during the course of treatment. All the untreated cases developed clinical signs within a period of one and a half months.

A positive reaction in the early latent period of syphilis is therefore regularly followed by a clinical recurrence. In some cases reaction and recurrence are coincident, while in a few recurrence does occur without a positive reaction, but for the most part the positive reaction appears before the recurrence. If one treats the patient as soon as the positive reaction is shown, the clinical recurrence can be prevented.

In the latent period, when the lesions are apt to be found in the internal organs, it is not so easy to prove the coincidence of reaction and syphilitic lesion.

What part should the Wassermann reaction play in directing antisyphilitic therapy? We have seen how valuable it is in the control of treatment. Are we justified in basing our treatment on the behavior of the Wassermann reaction? Up to the present time the best method of treatment has been the chronic intermittent. Are we justified in discarding this well-tried method for the newer biological method of Citron?

Briefly, this therapy, which has numerous adherents, consists in treating a case of syphilis intensively till the symptoms and positive reaction disappear. Examinations of the blood serum are made at regular monthly or bimonthly intervals, and subsequent treatment is made dependent upon the Wassermann reaction, or, it goes without saying, on the presence of clinical symptoms. Should the Wassermann reaction become positive, with or without symptoms. treatment is reinaugurated and continued till the reactions and symptoms disappear. The routine of serum examinations is then continued. Should the reaction remain continuously negative for twelve months, without any clinical symptoms developing, the patient can be declared cured.

It seemed to the writers therefore, in view of their present still limited knowledge of syphilis, that it would be more practicable, more advisable, nay, even imperative, to treat every case of syphilis in the chronic intermittent and intensive manner for two years at least, whether with salvarsan, with mercury, or the two combined, later applying the method of Wassermann control. If a patient so treated shows no symptom and a negative reaction over a further period of twelve months or more, he can be declared in all probability cured, though one is not yet justified in making such a definite assertion.

## THE PARASITE OF CANCER.

BUTLIN (British Medical Journal, April 27, 1912) in his third lecture upon the working theory of cancer states that if there be one thing which is more clearly proved than another in relation to malignant disease in the course of the last thirty vears, it is the wonderful improvement in the results of operations for cancer. Wide and early operations, adapted to the pathology of the particular variety of malignant disease in each particular part of the body, have been attended with very great success. Nor is this to be wondered at; for the tumor is the manufactory and the storehouse of cancerous cells. And even in those cases in which the cells have begun to migrate, it is most desirable to get rid of

the chief source of cancer cells. The resistance of the host has a much better chance of contending successfully with scattered cells, perhaps not yet firmly established where they lie, after the removal of the tumor. Indeed, he had thought for a long time past that if a "specific" against cancer were discovered it might even then be very desirable to remove the primary lesion— the tumor.

It will be noted that, in connection with "wide and early operations," it is suggested that the operations must be "adapted to the pathology of the particular variety of malignant disease in each particular part of the body." For thirty years he has urged this. But it is not yet by any means generally accepted or acted on. Because a particular scheme of operation is successful for a particular variety of cancer of one part of the body, a scheme as nearly like it as possible is recommended for a different variety of cancer in another part of the body. This method of reasoning by analogy has led to very serious errors in the scheme of operations. The operative treatment of cancer of the breast has been taken by a large number of surgeons as indicating the ideal which should be aimed at in operations for malignant disease of all parts of the body. It includes two very important features—the removal of the entire breast, and the removal in a continuous mass of all the tissues between the breast and the axillary glands. The success which has attended operations for cancer of the breast has led many persons to believe that precisely the same principles should be applied in every operation for cancer in which it is possible to apply them. Not many years ago there were distinguished surgeons who insisted that the entire tongue should be excised in every case of cancer of the tongue. For quite a number of years there were surgeons and laryngologists in the United States and on the Continent who removed the entire larvnx in every case of cancer of the larvnx, whether intrinsic or extrinsic, whether large or small.

Butlin thought the "entire organ" craze

had by this time died out, except for such organs as the breast, ovary, testis, etc. But the removal of the tumor, the associated glands, and the intervening tissues in one continuous mass still possesses great attraction for certain surgeons. It is recommended as a routine operation in cases of cancer of the tongue, in spite of the fact that it seriously adds to the danger of the operation and impairs the powers of speech and mastication. It is quite unjustified by careful observation and comparison of the results of operations. Butlin thought he had recently seen it recommended for cancer of the lower lip, for he has seen some ghastly pictures of quite up-to-date operations on the lower lip; but he supposes they refer to very extensive primary disease of the lip.

Some of these operations are recommended on the microscopical findings of some of the cases in which continuous sections have been cut from the tumor to the glands. Cancer cells have been found in the intervening tissues, and the conclusion has therefore been drawn that the intervening tissues ought to be removed in every case, in spite of the much greater danger to life from the operation and the much greater permanent crippling of the patient. Fortunately, this routine, which has been particularly urged in the treatment of cancer of the tongue, has not been adopted by the majority of surgeons.

The tumor of the tongue and the associated glands have been separately removed, and the results have been such as to justify separate removal as against continuous removal. These cases and other similar cases in other parts of the body clearly show that every cancer cell or group of cells which the microscope discovers do not develop into tumors, even when they seem to have made good their footing in the tissues at some distance from the tumor. Butlin states that he has been so impressed with the danger of trusting implicitly to microscopic findings and planning operations on them that he has ventured to lav down the axiom: "That if an operation does not fulfil the requirements of pathology and is,

nevertheless, exceedingly successful, the pathology which relates to it must be revised; either the observations are incorrect, or the deductions which are drawn from them are not justified."

# PNEUMOCOCCAL PERITONITIS IN CHILDREN.

BARLING (Practitioner, April, 1912) observes that the body is more susceptible to the invasion of the pneumococcus in early life than in later years. Although it can be demonstrated in the nasopharynx, the mouth, and alimentary canal in numbers of healthy individuals at all ages, yet the pathological conditions induced by it otherwise than in the lungs or pleura are rare in adults; in children, however, in addition to the frequency with which the lungs and pleura are attacked, it not infrequently gives rise to lesions of the joints, epiphyses, meninges, peritoneum, pericardium, middle ear, or subcutaneous tissues. These conditions are sometimes multiple and often fatal, and indicate a pneumococcal septicemia. Such a general infection is rare in adults. their greater resistance enabling them to localize the invasion of the organism to the primary site of infection, usually the lungs.

Pneumococcal peritonitis occurs with sufficient frequency to make it a factor of real importance in the differential diagnosis of the acute abdomen in the child, and inasmuch as the onset may anticipate or be independent of any pulmonary lesion, the problem of diagnosis is still further complicated.

Barling states that in a series of 27 laparotomies for acute abdominal inflammatory conditions in children under the age of twelve, he has met with three cases of pneumococcal peritonitis. The incidence is greater in the female than in the male. Of 234 tabulated cases there were 62, or 27 per cent, males; 172, or 73 per cent, females. Of Barling's 28 cases post-mortem examinations were performed in 18. In only one was any macroscopical lesion found in the intestine. In this case two small tuberculous ulcers were present in the lower part of the ileum. In two other cases marked swelling of Peyer's patches and the solitary

follicles was present. The only theory that will explain the many features of the disease and account for the wide-spread and diverse lesions that are associated with it is to regard the infection as a septicemic manifestation.

Out of 28 cases, one or both lungs were affected in 19, and one or both pleural cavities were affected in 19. In other cases either the lung or the pleural cavity was affected, but not both. There were six pericardial involvements, and in these cases there was a wide-spread infection involving the lungs, one or both pleural cavities, the pericardium, and the peritoneal cavities. All were fatal. In a certain proportion of cases the peritoneum only is attacked and no lesion is present in the lungs or elsewhere. Pain is usually the first symptom complained of. This indicates an inflammation of the peritoneal surface of the bowel. Diarrhea comes on a few hours later as all the coats become involved in the inflammatory process, and so would appear to be a result of the peritoneal infection rather than a causative factor.

The appearance presented by the peritoneal cavity after infection with the pneumococcus is very characteristic. The bowel is inflamed and distended, and the coils are lightly glued together by the roughening of the peritoneal surfaces and by the fibrinous exudate lying on them. The infection is wide-spread, and there is a general diffusion throughout the whole peritoneal cavity of the characteristic exudate, consisting of a serous fluid portion, with large fibrinous or fibrinopurulent greenish-yellow flakes floating or lying in it.

In the onset of pneumococcal peritonitis three different types may be recognized: First, the very acute cases characterized by diarrhea, vomiting, and severe abdominal pain, with rigid, tender, distended belly. Seven of the 28 cases belonged to this class. Three died and four recovered. The next class included those in which simultaneously, or almost so, with the onset of the peritonitis a pneumonia develops. Such patients present well-marked abdominal signs and a pneumonia of one or both lungs.

Fourteen out of the 28 cases belonged to this type, and of these only one recovered.

Possibly this case should have been placed in the first category, as the lung signs were very indefinite though the respirations were 40 per minute.

In the third category may be placed those cases in which the septicemia is of a more chronic type. Often pneumonia has been present some weeks previously; following this the patient has gone down-hill, and collections of pneumococcic pus have appeared in one or other pleural cavity or peritoneum. Such cases may in turn develop an infection of both pleural sacs, and following this a peritonitis. These cases are most suitable for vaccine treatment to shorten the duration of disease and to prevent the recurrence of residual infections. But one of the seven cases belonging to this class recovered.

Pain is usually the first symptom, which is severe, general, and persistent. Occasionally it becomes localized to the umbilicus and right iliac fossa. It is followed by diarrhea, which may persist for several days. abdomen rapidly becomes generally tender, immobile, and rigid; later on these signs tend to become most marked in the lower part of the abdomen, and often the right iliac fossa is especially affected. There is often dulness in the right or left flank, and a feeling of fulness as soon as the examination is made. Fever is present from the commencement. There is rapid wasting. Leucocytosis is generally absent after the first day or two, and in very acute cases there is no increment of leucocytes throughout the illness, all resistance seems paralyzed, and the patient dies without reacting in this manner. On or about the third day the leucocytes begin to jump, and may continue until they are very high. In cases that pass on to the subacute stage the effusion localizes itself to one part of the abdomen, which remains tender and resistant, the patient wastes rapidly, diarrhea persists with occasional vomiting, and a high leucocytosis is present. In not a few cases differential diagnosis from appendicitis is impossible; but the early and diffuse rigidity and tenderness are suspicious signs, and if these are accompanied by initial diarrhea there is a strong suspicion that the case is one of pneumococcal peritonitis.

Looking to the septicemic nature of the infection, the mortality will always necessarily be high; in the series of 28 cases under review six recovered and 22 died, a mortality of 79 per cent. The type of case in which the best prognosis can be given is that in which the peritoneum only is attacked and there is no sign of involvement of lung or pleura; four out of seven of such cases recovered. All the cases that recovered had been operated on, and none recovered that had not been so treated. latter, however, include all the worst cases in which the peritonitis symptoms were overshadowed by the general septicemia. Very few of the cases were operated on as early as they should have been, and earlier operation will undoubtedly save a few more cases, for notwithstanding the general septicemia the powers of resistance of the body will be aided by early evacuation of any of the local collections of pus, whether in the pleura or the peritoneum. In one case which recovered both the left pleura and the peritoneum were infected, but inasmuch as the patient was under treatment for the empyema at the time of onset of the peritoneal infection, the abdomen was opened earlier than in any other case in this series, and the patient recovered after a long illness. All cases in which the pericardium was infected proved fatal.

Success in the surgical treatment of the various forms of septic peritonitis depends on our ability to remove and drain the local lesion which has started the condition. The infection is first local and then generalizes throughout the peritoneal cavity, and later occasionally becomes septicemic. In pneumococcal peritonitis the condition is septicemic from the first. Incision and drainage, however early performed, will fail to relieve in many cases, and the mortality will always be high. Nevertheless, free drainage of all collections of pus, whether in the pleural sac or in the peritoneum, will aid the defensive powers of the body against the infection. The earlier this is done after the first manifestation of symptoms the bet-In the 18 cases operated on in this series, all but two had marked abdominal symptoms for more than forty-eight hours,

and three over a week, before operation. The two early cases both arose in hospital; one of these recovered, in spite of having a right-sided pneumonia and empyema as well as the peritonitis.

Acting on the general lines that have been so successful in lowering the mortality of septic peritonitis, incisions should be made in both flanks and in the middle line above the pubes, tubes being placed in the pelvis and loins. No wiping or irritation is done; such procedures remove not only the infecting organisms, but sweep away all the defensive powers of the peritoneum, increase absorption, and prolong the operation unnecessarily. The operation should be done as speedily as possible and the patient put back to bed in the Fowler position. Saline solution should be given freely, by the rectum by continuous proctolysis if possible, or failing this, by the intravenous method. Nothing should be given by the mouth except a little water, and all aperients should be withheld till some days after operation.

The treatment of pneumococcic infections by vaccines has not met with that success which at first sight might be expected from such methods.

In the very chronic cases with residual abscesses in the pleura, peritoneum, or elsewhere in the body, the use of autogenous vaccines has been attended with considerable success, and should be employed as a routine measure.

# CLINICAL INDICATIONS FOR TRANS-FUSION OF BLOOD.

Soresi (Medical Record, May 4, 1912) has performed twenty-five cases of direct transfusion. Very gratifying results were obtained in hemorrhage from all causes, providing the condition that caused the hemorrhage was removed. Blood transfusion should be employed only when the loss has been severe and shock is present. In this series of cases it seemed to the author that transfusion, though successful technically, did not help the patient in one case of hemorrhage from miscarriage, and in another from ulceration of the intestines in typhoid fever—the patient dying while the procedure was

going on. In severe cases of postoperative shock transfusion is useful not only after but during operation. Many patients could be saved if the shock which is caused by the anesthetic and hemorrhage during operation could be prevented. In five cases of operation on the biliary tract two patients died: transfusion in one was performed three days after operation-blood serum and saline solution had been used previously; in the other transfusion was performed five hours after operation, and the patient died a few hours later. other three transfusion was performed during operation, and the patients made an uneventful recovery, although one had only thirty per cent hemoglobin before the operation; in none did postoperative hemorrhage occur. Thé author describes an ingenious and somewhat elaborate technique.

### CHOLECYSTOSTOMY VS. CHOLECYS-TECTOMY.

FRANK (American Journal of Surgery, May, 1912) says that, guided by a clinical and operative experience of over twenty years, he is convinced that the most rational treatment of gall-bladder infection, with or without the presence of complicating calculi, is preëminently early incision and drainage, and that cholecystectomy should be resorted to only under the following circumstances and conditions:

Following the infliction of trauma so severe as to necessitate extensive resection of the gall-bladder—i.e., rendering preservation of a functionating portion thereof impracticable.

In extensive gangrene causing practical destruction of the gall-bladder or its ducts, thus rendering future function impossible.

In chronic cholecystitis where the gallbladder is markedly thickened (shriveled or puckered), or so universally adherent to surrounding structures that it is functionless.

For the elimination of a persistent mucous fistula—i.e., one of six to eight months' duration—following previous operation upon the gall-bladder or its ducts.

In primary carcinoma.

While long incarceration of calculi may produce stricture of the bile ducts, experience has shown that, after removal of the calculi and the institution of adequate drainage, the stricture may finally disappear and the ducts resume their normal condition and function. Even where there exists a fistula between the gall-bladder and the stomach or duodenum, cholecystectomy is contraindicated, unless an impermeable stricture exist in the cystic duct. Likewise, where the gallbladder has ruptured, or has become perforated from any cause, if its walls be properly sutured and the viscus drained, successful results oftentimes ensue, and in acute empyema of the gall-bladder, the condition for which cholecystectomy has so frequently been recommended and practiced, the operation is rarely, if ever, indicated as a primary procedure.

## BLOOD TRANSFUSION FOR HEMOR-RHAGIC DISEASE OF THE NEW-BORN: THE USE OF THE EX-TERNAL JUGULAR VEIN IN INFANTS.

VINCENT (Boston Medical and Surgical Journal, April 25, 1912) reports the use of coated glass tubes in hemorrhagic disease of the new-born in order to emphasize the striking result of blood transfusion in this disease and to describe a variation in the technique, which shortens and simplifies the operation in infants. He employed a coated glass tube, attaching to the radial artery of the donor and the external jugular vein of the infant.

In the first case the infant, the third day after birth, passed a stool containing bright-red blood. Similar movements followed. Thirty cubic centimeters of a rabbit's serum was injected subcutaneously, and a little later 2 ounces of a two-per-cent gelatin solution was given by the rectum. The latter was followed shortly by bright-red blood. Paregoric and morphine were also administered. The umbilical stump was clean. The progress was apparently toward a fatal ending. The father served as the donor, and the left radial artery was isolated under cocaine in the usual manner.

The external jugular vein was exposed through a 1/2-inch transverse incision which was made in a fold in the skin about the middle of the neck on the left side. In the collapsed state this vessel, which has thin walls, appeared to be very small, but when the lumen was exposed it proved to be as large as the femoral vein or even larger. A coated glass tube was then tied into the vein. The tube was 12 centimeters long, and the end which was inserted into the vein was about 21/2 millimeters in diameter. It was then tied into the vein and into the artery. The blood was allowed to flow for about five minutes, being checked from time to time, but continued until the infant's face regained its normal color. On the following day two large dejections of dark blood were passed. Thirty-six hours after the operation the infant had a normal fecal movement, nor was there any further sign of hemorrhage, the child making a complete recovery.

In all the author has had seven cases illustrating the fact that infants may be transfused with safety and without great difficulty by means of coated glass tubes of proper length and size. Experience in the last four cases has convinced the writer that the external jugular vein is the best vein to use in transfusing infants. The result of the operation in the six cases of hemorrhagic disease of the new-born shows that it can be entirely cured by transfusion.

# FRACTURES AT THE ELBOW IN CHILDHOOD.

CAMPBELL (American Journal of Obstetrics and Diseases of Women and Children, April, 1912) concludes an article on this subject as follows: The prime consideration in the treatment of fractures of the elbow is not simply a reduction that restores continuity of the fragments, but one that restores functional activity of the joint. It is obvious that reduction here is something more than the reposition of fragments; it implies a coaptation so accurate and a retention so complete that the resulting joint surfaces will permit of normal joint move-

ments. If the fragments be accurately reduced and held in this position, the question of duration of immobilization and the special position in which the limb should be placed are secondary considerations. The fundamental fact must be appreciated that produces ankylosis; it is faulty reduction causing periosteal proliferation that locks the joint. Furthermore, no special position of the arm will obviate the disastrous results of an incomplete reduction.

The general rule to be followed in all cases of fractured elbow is accurate reduction maintained by that splint and that position of the arm which is best suited to the special indications of the individual case.

It is futile and misleading to presume to indicate precise methods of treatment invariably applicable to each variety of fractured elbow. Even in the same type of fracture there are anatomical differences which must be appreciated. Some displacements are corrected by traction, others by direct pressure on the fragment. Each fracture is a special problem with its individual needs and its peculiar indications; while, therefore, no precise rules can be formulated, certain precepts may be followed which will be a safe guide in all cases.

The first step is to find out exactly what is fractured and be satisfied with nothing but anatomical accuracy. A clinical examination under anesthesia is the first requisite, but it is never sufficient; it must be supplemented by an x-ray examination. The radiographs should be made and interpreted by a radiographer of experience. The x-ray picture without proper interpretation is useless.

The second step is to reduce the fracture by such maneuvers as are efficient in accurately coapting the fragments (flexion, extension, traction, direct pressure, etc.). A maneuver is selected for its efficiency and not according to precedent. Whatever the maneuvers required, care should be taken to avoid any rough manipulation, which only exaggerates periosteal lesions with consequent impairment of function. Firmness and gentleness are always more effective; they accomplish more and damage less.

The third step is to immobilize perma-

nently only when certain that reduction has been obtained, and that the position of the arm and the splint selected are adequate to maintain reduction. This will be evidenced by (a) normal conformation of the parts; (b) a normal range of flexion and extension: (c) the confirmation of a second radio-The procedure should be as follows: After reduction has been obtained. and the arm placed in that position which seemingly is most efficient in maintaining reduction, a temporary splint should be applied and a radiograph taken; if the picture confirms the accuracy of reduction and efficiency of immobilization, then the temporary splint should be made permanent. And no permanent immobilization should be attempted until satisfactory evidence has been obtained that the reduction, position of arm, and splint are as perfect as the character of the injury permits.

Lastly in the choice of splints, preference should always be given to plaster of Paris. No other form of splint can be molded so accurately or held so securely—an important consideration where the child's restlessness predisposes to secondary displacement.

### CIRCUMCISION IN GIRLS.

Morris (International Journal of Surgery, May, 1912) states that one of the stigmata of decadence consists in lack of full development of the glans of the clitoris; normal cleavage does not take place between clitoris and prepuce and the prepuce remains adherent. This condition is apt to be found in cases of incomplete development of the mammary glands and of other parts of the sexual apparatus. The adherent prepuce may or may not be of consequence. The majority of women probably never know whether the prepuce is adherent or not. In some cases, however, girls suffer from preputial adhesions in the same way that boys Girls apparently require circumcision as often as boys do and for the same general reasons.

In any given case in which the physician decides that an irritable prepuce causes local or reflex disturbances in a child, calling for attention, simple separation of the prepuce from adhesions does not suffice. Readhesion is apt to occur, and usually does occur, sometimes with the effect of causing more disturbance than was originally present. It is best to give the patient a general anesthetic and perform circumcision.

### PYLOROPLASTY.

TURNER (Surgery, Gynecology and Obstetrics, June, 1912) states that an investigation which he made into the after-history of forty-eight patients operated upon for gastric and duodenal perforation showed that in 38.8 per cent the accident of perforation did not cure the stomach symptoms, and on inquiring more closely into the matter, those not cured nearly always presented a history of more or less chronic stomach trouble. This led the writer to make it a rule, whenever the condition of the patient permitted, to do more than merely close the ulcer in those who had a history of chronic stomach trouble preceding the accident of perforation.

In many cases this necessitates gastroenterostomy, but in some it may be replaced by the simpler and quicker pyloroplasty. This operation enables one to deal with a simple stenosis, to excise a pyloric or duodenal ulcer, or so to close a perforation as to avoid the production of stenosis.

Suitable cases are those with small ulcers at the pylorus, or within an inch on either side and situated in the middle line, and without evidence of any more chronic ulcer on the opposite wall. If the pylorus will not easily lift up into the incision, such an ulcer probably exists, and the case is more suitable for gastroenterostomy than pyloroplasty.

# DISEASES OF THE ACCESSORY SINUSES.

BRYAN (Surgery, Gynecology and Obstetrics, June, 1912) concludes an article on this subject by stating that in his experience the majority of severe inflammations of the sinuses are accompanied by more or less disturbances in the eye, these disturbances varying in intensity according to the severity of the sinus disease, and the reason they

are not more frequently recognized is that they are not looked for until the eye manifestations are self-evident.

The change in the visual fields is a significant symptom of sinus inflammation, and is generally associated with disease in the anterior cavities, but is also frequently found in disease of the posterior sinuses.

Congestion of the papilla is an early sign of disease in the posterior sinuses.

A scotoma and enlargement of the blind spots are so frequently found in posterior sinus inflammation as to make them almost pathognomonic.

There is no one operation that is suitable to all cases. The more conservative methods have relieved many serious cases, and, if the conditions justify it, the intranasal methods should be tried first; failing to bring about relief in this way, then one of the more radical measures will have to be adopted, and the operation that offers the best chance of reaching thoroughly all the diseased parts of the frontal, ethmoidal, and sphenoidal cavities is the Killian, and in maxillary sinus complications a combination of the Killian with the Caldwell-Sue operation.

#### TONSILLOTOMY OR TONSILLECTOMY.

Danziger (New York Medical Journal, June 1, 1912) gives the following indications for enucleation of the tonsils in children:

Cases of buried tonsils where the pillars and the plica—that is, the fold of mucous membrane which connects the two pillars below—envelop the tonsils almost entirely. Such tonsils are of no use, as they will not take up bacteria with the ingested food, nor will they be able to empty their crypts in a secondary tonsillitis from nasal or buccal infection.

In cases of small atrophic tonsils which cannot be removed, partly on account of their size, a microscope shows large defects in the epithelium of the crypts, sometimes its complete disappearance.

In cases of suspected tuberculosis of the tonsils, unfortunately, the chronic form of tuberculosis cannot be diagnosticated clinically. Therefore, given an anemic child with tuberculous adenitis of the neck and abnormal tonsils, the tonsils have to be enucleated, as the tubercles are always situated deep in the tonsil underneath the epithelium of the crypts.

In adults, recurrent attacks of circumtonsillar abscess call for enucleation as the only guarantee against future attacks.

Malignant affections are self-evident indications for this operation.

To make the age of the patient an important factor for the choice of operation is not logical, as the microscope shows the existence of the crypts at all ages, with the same production and diapedesis of lymphocytes, even if there is an increase of connective tissue.

That the total enucleation of the tonsils does not always accomplish the desired results has been shown by Finger, who has demonstrated that in quite a number of cases new lymphatic tissue may develop from the lymphatic tissue back of the tongue. As another drawback to the total extirpation of the faucial tonsils, we have to consider its deleterious effect on the voice, especially of singers and public speakers.

### TREATMENT OF HEMATURIA.

W. BLAKE GIBB (New York Medical Journal, June 1, 1912) states that the first indication, at least to the patient, is to stop the bleeding. This bleeding may be dangerous, but rarely fatal. Drugs appear to have less effect here than on other visceral hemorrhages. When due to renal calculus, absolute rest, cold acidulous drinks, hot applications, and, if much pain, morphine, from one-eighth to one-quarter grain hypodermically, may be given. Hemorrhage from acute congestions requires hot fomentations, saline laxatives, and diaphoretics; vesical hemorrhage, cold applications to the hypogastrium, with ergot by mouth, or washing out the bladder with astringents, as alum, two grains to the ounce, after the bladder has been emptied. When due to malignancy, operation is needed at once if the disease has not gone too far. Tuberculous disease requires the same care as when it

affects other portions of the body. Injuries, if not severe, require rest and cold applications, but if serious, operation must be attempted. Constitutional causes require general treatment, as in hemophilia the calcium salts are necessary. But each case requires careful examination and study, with treatment appropriate to its own peculiar needs

### OPERATIVE TREATMENT OF FRAC-TURES.

Frankenstein (Deutsche Zeitschrift für Chiurgie, Bd. 114, Hefte 1-3) after an experience with open operation in twentytwo cases of fracture of various bones concludes that, especially in the treatment of fracture of the shaft of the tibia, in which fracture it is difficult by conservative methods to replace the fragments or to keep them in position once they have been replaced, the open operation with fixation by means of plates and screws is very highly to be recommended. Also, in fractures of the femur which show no tendency to healing, or which have healed in very bad position, open operation gives very satisfactory Fractures of the humerus with marked displacement at points well removed from the joints afford a suitable field for this form of operation. In fractures close to the elbow-joint bone suture will always remain a two-edged sword. So far as the ulna, the olecranon, and the patella are concerned, the author has had better results with suture than with plates and screws.

# CARCINOMA OF THE PHARYNX.

Schumacher (Beiträge zur klinischen Chirurgie, Bd. 77, Heft 1) states that a review of the experiences with carcinoma of the pharynx at the Zurich clinic over a period of almost thirty years leads to the conclusion that this disease is of a very grave nature. Of 134 cases of oropharyngeal carcinoma 82 had to be declared inoperable immediately upon admission to the hospital, in spite of the fact that the limit of operability is by no means narrow. This large number of inoperable cases is due partly to the neglect of the patients themselves and

partly to negligence on the part of the family physician. In many cases, however, this insidious disease remains for a long time without subjective manifestations. much less seldom than one would infer from its seat. In most of the inoperable cases the patients stated that they first consulted a physician when they noticed a swelling of the glands on the outside of the neck or suffered from severe neuralgic pain. In not a few instances the physician had treated these cases for weeks or months before admission to the clinic under such diagnoses as nasal catarrh, angina or laryngeal catarrh without ever having made an examination of the throat. As a result the author only in exceptional cases found a small, circumscribed cancer. He regrets to say that these conditions have not been bettered during the last decennium.

The early reference of the patient for operation is the first principle in the treatment of pharyngeal carcinoma in order to reduce the immediate operative mortality and enhance permanent operative results. The later results are almost as bad as the original prognosis in the inoperable cases, for 25 cases out of 32 dismissed from the clinic as cured suffered a relapse, mostly during the first year following operation. Only three patients went beyond the fiveyear period free from recurrence, though one of these after ten years suffered a recurrence. Five patients were free from recurrence when they died of other causes, all within the five-year period.

In the cases of recurrence after a freedom from the disease of about seven months on the average, nothing was really gained because, on account of the disturbances of speech and swallowing, the later condition of the patients was no better than the first. How may better results be obtained? The one way, namely, the turning over of such patients to the surgeon at an early stage of the disease, must always be strongly insisted upon. A second requirement is the performance of a most radical operation. However, on account of the nature of the surrounding tissue, the injunction to carry the excision wide into the healthy tissue is difficult of fulfilment. Nevertheless, the experience of the Zurich clinic, where the tendency has been toward a conservative operation, and where the suffering of the inoperable cases and of those who have had a recurrence has been terrible, should lead one to favor, as advised by Gluck, the most radical operation.

# THE TREATMENT OF TRAUMATIC TETANUS.

HUBER (Beiträge zur klinischen Chirurgie, Bd. 77, Heft 1) states that in the treatment of traumatic tetanus the region of the wound is cleansed with soap and water, alcohol, and sublimate solution, the wound itself is syringed out with sublimate solution, any particles removed by means of a swab and forceps, and tincture of iodine applied. Torn and necrotic wound borders are removed and pockets split. The wound is not sutured and drainage is provided by packing with iodoform gauze. Old wounds after the outbreak of tetanus, in case they are favorably situated and not too extensive, are excised and the fresh surface seared with the thermocautery. In this way the entrance of air is prevented and small sinuses closed.

In outspoken tetanus, in the hope of saving life in several patients, crushed and gangrenous fingers were amputated; once a hand and at another time an arm was sacrificed. After the wound is cared for the case is treated symptomatically. If possible the patient is put into a quiet room and provided with an extra nurse. When the taking of food is seriously interfered with, feeding is carried out by means of a tube, through the nose if necessary. Patients that can swallow are given fluid food, and those who cannot swallow are fed by enemata. If there is great thirst in those who cannot swallow, fluid is supplied by saline injections. When there is severe dyspnea, oxygen inhalations are given; for the heart caffeine and camphor are used, and, in order to reduce the high reflexes and produce sleep, chloral is given, and for pain morphine. To these measures is added antitetanic serum. This is given subcutaneously, intramuscularly, intravenously, and subdurally by means of lumbar puncture. For

subcutaneous injection the outer surface of the thigh, the breast, or the upper arm is selected; for intramuscular injection the thigh; for intravenous injection the median cubital vein; and for intradural injection the space between the third and the fourth lumbar vertebræ. It is only from early administration that one can expect good results. This is not always done with the desired effect, for in one of the author's cases serum was given immediately upon the onset of symptoms, yet the patient died. In another case it was given six hours after the onset. yet death resulted. In other cases it was given eight, ten, twelve, eighteen and twenty-four hours respectively after onset. with fatal result in every case. Among seventeen cases treated within twenty-four hours of the onset in not one did cure occur. Of twenty-one cases which received the injection later than twenty-four hours after the onset seven recovered and fourteen died. However, in all but three of these cured cases the incubation period was twelve days or more, which in itself is of favorable prognostic significance. In two cases with five and seven-day incubation periods respectively the favorable result can hardly be ascribed to the serum, since these were from the first mild cases and did not receive the serum until four to five days after the onset. Such cases get well without serum.

The experience at the Zurich clinic has been that in spite of the use of serum the mortality from tetanus has not been diminished. No case of outspoken tetanus has been lessened in severity by the use of antitoxin. Good results are, however, to be expected from the use of antitoxin as a prophylactic.

# FRACTURE OF THE LOWER JAW AND ITS TREATMENT.

EGGER (Beiträge zur klinischen Chirurgie, Bd. 77, Heft 1) bases upon the experience with 76 cases of fracture of the lower jaw the following principles: Fracture of the lower jaw is typically a weak-point fracture occurring at a place where the resistance is weak, due to anatomical, physiological, or pathological characteristics. The active agent in the displacement of the frag-

ments is muscular contraction, the force of the trauma and the course of the fracture line being determining factors. Suture of the bone is indicated only in toothless jaws. Splints serve best in jaws which have teeth and are the least annoying to the patient. The splints should fit firmly and should be made of sterilizable material.

# OPERATION IN SUPPURATIVE MENINGITIS.

Kostlivy (Archiv für klinische Chirurgie, Bd. 79, Heft 3) reports three cases of suppurative meningitis operated upon with favorable results in two cases, and observes that the surgeon should not hesitate to perform a radical operation in any case so soon as the diagnosis of an intracranial suppurative process is manifest. It is only by early operation in these cases that the conviction can be forced upon the internist that these cases belong as much to the surgeon as does suppurative peritonitis. By operation the mortality in the most severe cases of peritonitis can be reduced 50 per cent, not to mention the number of patients in whom early operation will protect against these grave complications. Perhaps the same hope will be realized in cases of suppurative meningitis.

# TREATMENT OF FRACTURES OF THE SKULL.

SCHAACK (Archiv für klinische Chirurgie, Bd. 79, Heft 3) of Zeidler's clinic at the Obuchow Hospital for Men in St. Petersburg reports from that clinic upon 530 fractures of the skull covering the years 1900 to 1910. Of these 364 were of the convexity and 166 of the base. The number of skull fractures constituted 9.7 per cent of all fractures treated during the same period. This percentage is higher than in most other series, a fact accounted for by the low state of civilization amongst the population from which this clinic is recruited and the consequently large number of persons who are assaulted by blows upon the head; also by the wide-spread drink habit—144 such fractures were suffered by

men in a state of drunkenness. Of the 166 fractures at the base the mortality was 102. The symptoms were in 41 complete unconsciousness: in 125 disturbance of consciousness; in 101 bleeding from the ear; in 75 bleeding from the nose; in 14 bleeding from the mouth; loss of cerebrospinal fluid occurred in 11 cases; the facial nerve was paralyzed in 45 cases; vomiting in 28; paralysis in 10; spasms in 12; speech disturbance and aphasia in 12. The treatment in fracture of the base consisted of complete rest in bed, ice to the head, and, when necessary, stimulants or narcotics. In case of bleeding from the ear or nose tamponade and irrigation were avoided, as both are conducive to infection in the deeper tissues with resulting meningitis. Operation was done in only one case. The patient died five days later. Of the 64 cases cured, in 15 persisted paresis, in eight running ear, and in three disturbances of vision. Of the 102 fatal cases 56 were moribund on admission: 28 died of suppurative meningitis, and 18 on account of the severity of the injury. It is thus observed that in all who survive the first one or two days meningitis is the commonest cause of death. Treatment extended over a period of several weeks; only a few were discharged under two weeks; most cases were treated for three to four weeks. and some as high as a month.

Of the 364 cases of fracture of the convexity, 85 died. The symptoms observed were in 95 cases unconsciousness, in 35 vomiting, in 49 paralysis or paresis, in 14 convulsions, and in 13 disturbances of speech or aphasia. The exact diagnosis of the character and extent of the fracture was made in most cases only after enlarging the scalp wound by operation. There were treated by operation 206 cases, of which 52 died. The dura was injured in 93 cases, of which 45 died. Injury of the dura is to be considered as a very dangerous complication, which renders the prognosis much more grave. If the brain substance is injured also, the prognosis is still worse; out of 53 such cases 30 were fatal, usually as a result of suppurative meningitis. The operative treatment consisted chiefly in enlarging the wound, caring for the injured bone in the usual way by removing dirt and splinters of bone, smoothing sharp edges, and in a few cases forming an osteoplastic flap.

#### TREATMENT OF LEG ULCERS.

LINDEMANN (Deutsche Zeitschrift für Chirurgie, Bd. 114, Hefte 5 and 6) reports his experience in the treatment of leg ulcers, and says that in case of small ulcers the best treatment is the application of an ointment with bandage after curetting the surface; in moderately bad cases skin transplantation after the method of Thiersch. If there is marked varicosity of the veins they should be removed through a number of small incisions, being careful to protect the skin. Incision of the ulcer or of the entire leg region after the method of Rindfleisch-Friedel is not in any case to be recommended. For the very severe cases of leg ulcer with changes in the bone, amputation is to be seriously considered, for by this means those who have been for a long time totally disabled may be restored at least to partial usefulness. Prophylaxis is very important. The circulation should be kept good in the legs by means of foot baths and massage. Anything which tends to the production of an ulcer must be avoided. Edema and varicosity of the legs must be combated by means of bandages, and the smallest injury must be carefully treated so as to bring about healing as quickly as possible.

# EFFECT OF THE SUN'S RAYS ON TUBERCULAR SEQUESTRA.

Franzoni (Deutsche Zeitschrift für Chirurgie, Bd. 114, Heft 4) says that intreating tubercular sequestra in the usual expectant way with a view to their separating by suppuration or being resorbed, meanwhile increasing the resistance of the organism by injections of iodine or other similar means, months at least are required to bring about the desired results. The process is especially slow because the tubercular tissues have very little tendency to healing and because no such great quantities of pus are formed as to facilitate the separation of the sequestrum. By operation the seques-

trum can be quickly removed, but, even if it is already well separated, the results after removal are not so good because of the lack of vitality of the remaining tissue; if it is not well separated there is always danger of removing more tissue than is necessary.

The treatment by sunlight, as in other expectant methods, has the relative disadvantage of requiring a long time, but this is offset by the favorable influence of the sunlight upon the general condition, also upon the vitality of the tissues in the region of the lesion. When the sequestrum has been eliminated under exposure to sunlight. the local process is also cured and the fistula closed. In this respect also the elimination of the sequestrum under the influence of sunlight differs from its removal by surgical measures. Also, in getting rid of the sequestrum under sunlight no more tissue is sacrificed than is absolutely necessary. Therefore, in all cases of sequestrum formation with fistula, treatment by sunlight, in spite of the long time required, affords the most ideal means thus far known. The influence of the sun's rays depends in part upon its bactericidal properties and in part upon its power over toxins.

#### POSTOPERATIVE PAROTITIS.

OEHLER (Beiträge zur klinischen Chirurgie, Bd. 77, Heft 2) says that in his experience postoperative parotitis was not an important complication, but rather simply an incidental phenomenon. The course was almost without febrile disturbance. It was almost in every case secondary to operations upon the stomach, intestines, or gall passages. In only one case did the process become septic. In all cases it came on in those suffering from great prostration, as when the strength and nutrition were much reduced by starvation, obstruction of the bowels, chronic icterus, or cancer. occurrence of the parotitis may be due to the fact that the operation was not entirely aseptic and that it was of hematogenous origin. It may be also that the fecal vomiting which accompanies many of these cases might at times be the cause of direct infection of the parotid gland. By way of prevention of the condition it is advised that earlier operation be carried out and a larger incision be used in cases which are apt to develop postoperative parotitis.

# PERFORATING WOUNDS OF THE LARYNX.

klinischen BOLTARSKI (Beiträge zur Chirurgie, Bd. 77, Heft 2) states that in the Obuchow Hospital for Men in St. Petersburg during the decade from 1900 to 1910, 220 cases of wounds of the neck were observed, and of these 25 were penetrating wounds of the larynx. In this series 21 were inflicted with suicidal intent. cases the cricoid cartilage was penetrated. in 7 the thyroid, in 7 the thyrohyoid ligament, and in 2 the conical ligament. The size of the laryngeal wound bore no definite relation to the skin wound; at times the skin wound was very large, while the wound in the larvnx was small, and at other times the opposite was the case. The wound in the larynx was at times isolated, while at others it was associated with injuries to the vessels and nerves. As a rule there is not much separation of the lips of the wound unless the larynx is completely severed.

The chief dangers of wounds of the larynx are asphyxia and hemorrhage. Later complications are tracheobronchitis, bronchitis, pneumonia, pleurisy, abscess and edema of the larynx.

The first duty of the surgeon in these cases is to control the hemorrhage and to counteract the tendency to asphyxia. bleeding vessels are to be ligated, the blood aspirated from the respiratory tract, and loose pieces of cartilage removed. The best method of dealing with the laryngeal wound is to suture it and the overlying tissues in layers. This affords the best means of securing healing and complete restoration of function. In nine out of eleven cases thus treated healing occurred by first intention. Prior to suture a prophylactic vertical tracheotomy must be performed and a cannula introduced. Drainage is introduced at the angles of the wound. The dressing is applied in such a way as to hold the head firmly in a flexed position. General anesthesia is very seldom required. Operation is done either under local anesthesia or without any anesthesia, as the state of the patient's consciousness is often very low.

### JUXTA-EPIPHYSEAL FRACTURE OF THE UPPER END OF THE HUMERUS.

Albee (Medical Record, May 4, 1912) notes that epiphyseal disjunction of the upper end of the humerus is an accident of vouth, and occurs from birth to the twentieth year. It is generally conceded to be the most common of epiphyseal fractures. The upper epiphysis of the humerus comprises the head and both of the tuberosities. It originates in three ossification centers. the head and the two tuberosities, which unite to form the epiphysis at an indefinite period. Union with the shaft takes place at about twenty. Diagnosis is usually made by palpation, which reveals the normal convexity of the shoulder, due to the presence of the humeral head in the glenoid cavity, thus distinguishing it from a dislocation. The upper end of the lower fragment, somewhat rounded in its contour, can usually be felt under the coracoid process. The crepitus is of a softer quality than in cases of ordinary fractures—i.e., cartilaginous. Localized pain and swelling are present. wrinkling of the skin, caused by the hooking of the upper end of the lower fragment into the subcutaneous tissues, is very character-Abduction is especially limited and muscular spasm interferes with all motions, A high injury near the joint in a young individual, showing displacement forward and inward of the shaft, is very suggestive of epiphyseal disjunction.

Numerous cases are recorded. The fracture is exposed by a large U-shaped incision with its apex about 1½ inches above the insertion of the deltoid muscle. The skin, fasciæ, and deltoid muscle are turned upward en masse. They are then brought in good apposition by strongly elevating the arm forward and slightly outward, so as to come into alignment with the upper fragment, and firmly wired with silver wire. If he arm be brought to the side this wire will

not hold. Therefore it is important to dress the arm in abduction. The shoulder and arm are incorporated with the elbow flexed to a right angle in a plaster-of-Paris spica from the wrist to the umbilicus. The best technique for applying this cast to a patient under an anesthetic is to have the patient's head and shoulders pulled beyond the head of the operating table and that part of the body supported by an orderly sitting on a stool, with his foot on the round of the stool and his knee in the interscapular space. The thorax is best padded with complete sheets of cotton wadding. Traction is produced by an assistant pulling upward as the cast is applied. If the patient is not anesthetized for any reason, he can be seated in upright position on a stool. Two old people not reported at this time have been treated in this way with very satisfactory results. The convalescence of the above case was The patient was kept in bed uneventful. one week. During this time the weight of the arm and the cast was taken from his chest by suspending the same to a pole placed longitudinally over the bed. suspension, however, has not been necessary in any of the succeeding cases. cast was removed at the end of three weeks, and massage and passive motion were instituted. At the end of nine weeks the motions were practically normal.

In view of his reported cases and clinical observations of a considerable added number, the author concluded that this posture relaxes the prehensile or most of the strongest muscles of the shoulder and arm, namely, the pectoralis major, the biceps, the supraspinatus, the coracobrachialis, the strongest part of the deltoid, and the subscapularis muscles.

The lower fragment is controlled accurately and held very securely.

As in the case of a subtrochanteric fracture of the femur the capital fragment cannot be controlled on account of its shortness and the pull of the trochanteric muscles, therefore the lower fragment is placed in alignment with it in strong flexion and abduction. This treatment of the femur has for a long time been accepted, the same mechanical reasons holding here—that is,

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the long fragment of the humerus is placed in alignment with the position the short one mechanically takes on account of the pull of the tuberosity muscles.

If limitation of motion at the shoulder occurs this relation of humerus to scapula is the one of selection, both because it is a position of usefulness and because it permits the scapulothoracic muscles to functionate most efficiently.

From the experience of Drs. Orr, Berry, Hawley, and the writer it is a more comfortable position than the classical position of fixation to the side of the thorax.

The distal fragments can be controlled and the overriding prevented much better than in any other position.

The arm can be held and traction made very easily while the plaster-of-Paris cast is being applied.

# REVIEWS.

A TEXT-BOOK OF PATHOLOGY FOR STUDENTS OF MEDICINE. By J. George Adami, M.A., M.D., F.R.S., and John McCrae, M.D., M.R.C.P. Illustrated. Lea & Febiger, Philadelphia, 1912.

Many of the profession are already familiar with the exhaustive two-volume work upon Pathology which has appeared during the last few years from the pen of Dr. Adami. At the request of the publishers' Adami and his colleague now prepared a text-book in one volume which is supposed to contain the gist of the subject and to provide a manual for practitioners and students which is complete and yet not so exhaustive as the larger volumes. The authors bring to the preparation of the present work, which covers a little over seven hundred pages. wide experience in investigation and in authorship, and in the study of the literature with which their subject deals. have no doubt whatever that the present volume will at once attain a popular place amongst the text-books of the country. Unlike some books it is not over-illustrated. but nevertheless there are no less than three hundred and six engravings and eleven elaborately colored plates. Many of these engravings are taken from other sources than the author's own material, but on the other hand, a great many of them are original and all of them are excellent. author to write a successful two-volume work and then to be equally successful in condensing it into a one-volume work is, to say the least, unusual and surely indicates much literary ability.

DIGESTION AND METABOLISM. The Physiological and Pathological Chemistry of Nutrition. For Students and Physicians. By Alonzo Englebert Taylor, M.D. Lea & Febiger, Philadelphia, 1912.

Within the last few years a number of books dealing with diet and with the processes of nutrition have been prepared by competent authors, of which perhaps the most competent has been Lusk.

This new candidate for professional favor is written by one who for a number of years has been constantly engaged in studying physiological chemistry and the problems of metabolism.

Although at the present time many metabolic problems are by no means solved, nevertheless the author has been distinctly successful in presenting the latest views which are generally accepted and in studying the results of experiments made both in vitro and in vivo. The book does not strike us as being one which is particularly suited to the student as a text-book, but rather for the professional graduate who wishes to brush up upon this important subject, or for the author's fellow-teachers in this department of medical science.

What to Do in Cases of Poisoning. By William Murrell, M.D., F.R.C.P. Eleventh Edition. Paul B. Hoeber, 69 East St., New York. Price \$1.00.

Earlier editions of this little book have become familiar to many medical men in this country and England. The author claims in his preface to have thoroughly revised his text and to have added many new poisons, including, to use his words, "the deadly veronal." If his opinion in regard to the toxic properties of other substances is as distorted as it is in regard to this substance one would not expect to find very safe expressions of opinion elsewhere in the book, but as a matter of fact the rest of the text is excellent, though very condensed.

Essays on Genitourinary Subjects. By J. Bayard Clark, M.D. New York: William Wood & Company, 1912.

This little work, well described by its title, deals in a general way with cystoscopic diagnosis, gonococcic infections and the physician's responsibility, some necessary principles in the diagnosis of surgical conditions of the upper urinary tract, the value of some urethral and other germicides, newer methods in genitourinary surgery and kindred topics.

It is written in admirable style and discusses the various subjects with a sound common sense not always to be found in the writings of a specialist. The book can be read in an hour, and this time will have been spent serviceably even by the expert.

THE CARE OF THE SKIN AND HAIR. By William Allen Pusey, A.M., M.D. D. Appleton & Company, New York and London.

This work, dedicated to the author's wife, is designed for public instruction in the care of the skin and hair rather than for the use of the physician. Viewed from this standpoint it is worthy of high praise. The author states that the consumption of soap per capita is as good an index as we have of the state of civilization of a community. The author prefaces his text by clearly stating that there is no intention of catering to the pernicious habit of self-medication, and that his work is in no sense a book on the self-treatment of skin diseases—rather it is a means by which they may be avoided.

GONOCOCCAL INFECTIONS. By C. E. Pollock, Royal Army Medical Corps, and Major L. W. Harrison, Royal Army Medical Corps. Henry Frowde, Oxford University Press, 1912.

In this small book of 208 pages is given an excellent résumé of the present knowledge of the gonococcus and its evil effects upon the human. To those familiar with the literature of the subject the work will bring little that is new. To those who are busy in other departments of medicine it affords an excellent way of becoming familiar with recent knowledge. It is unfortunate that the reviewer cannot substitute for the word "knowledge" advances. It remains true that for gonococcic infection either local or general modern therapeutics have little new to offer aside from the vaccines and sera, which are still sub judice.

CHILDREN AND THEIR CARE AND MANAGEMENT. By E. M. Brockbank, M.D., F.R.C.P. Oxford University Press, New York, 1912. Price \$1.50.

This is one of the best books dealing with this subject with which we have come in contact, clear in print and in description, using simple terms, easily understood. can be placed in the hands of the nurse or parent with advantage. As we have said on previous occasions, there is no more difficult task for the medical man than to prepare a book dealing with medical topics for use by the laity. Either the text is hopelessly primitive in its character or hopelessly technical. Both of these difficulties have been avoided in the present endeavor.

THE CARE OF THE SKIN IN HEALTH. By W. Allan Jamieson, M.D., F.R.C.P. The Oxford University Press, New York, 1912. Price \$1.00.

The author has provided a small book of one hundred and nine pages, which could easily have been condensed into half of this space, dealing with a subject which is of more interest to the "social butterfly" than to the medical man, except in so far as the "social butterfly" may see fit to consult him for the preservation of the exposed portions of her skin. When on the title page we read that Dr. Jamieson is Knight of Grace of St. John of Jerusalem, Surgeon the King's Body Guard for Scotland, Royal Company of Archers, and Consulting Physician for the Diseases of the Skin to the Edinburgh Royal Infirmary, we cannot help thinking of the old adage, "The mountain which has been in labor has brought forth a mouse."

# CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The month of August is so much given up to holiday-making that there is little of interest in the medical world to chronicle. The last event of importance was the annual meeting of the British Medical Association at Liverpool, and the next thing to look forward to is the meeting of the British Association early next month. The interest at this meeting is usually more scientific than medical, but this year we are promised some startling discussions on the origin of life. The President will devote his inaugural address to this subject, and the zoölogists and botanists will announce their latest discoveries on this question and will combine in a discussion.

The International Eugenics Congress recently held at London University has accomplished at least one of its objects. drawn public attention to the principles of eugenics and this will serve to educate public opinion as to the way the application of these principles will affect the present social conditions in all countries. This will in time probably lead to their embodiment in practical politics, and indeed the Bill for the control of the feeble-minded now before Parliament is a step in this direction. Alfred Mjoen of Norway read a paper on "The Effects of Alcohol on the Germ-Plasm." He stated that for four years there had been an agitation by medical men in Norway to compel the classification of liquors in three sections, according to their percentage of alcohol. The state had recently passed legislation to this effect and he believed that with this system of classification under the control of the state the consumption of liquors would undergo a gradual change to lighter and more harmless In his closing address Major Leonard Darwin, the President, impressed upon his hearers the necessity of keeping the meaning of the word "eugenics" within well-defined but not too rigid limits. There would always be many philanthropists nobly endeavoring to fight the evils of social life, and they would naturally look to the eugenists for help. As men they must give help freely, but as eugenists they must be careful lest their own particular objects became obscured. By reminding themselves of their special sphere of action they would be enabled to continue at a task where no present glory was to be won and where no definite results even might be visible in their lifetime.

One of the results of the Congress is the establishment of a permanent International Eugenics Committee. This Committee will preserve the international coöperation already established and will make any necessary arrangements as to general policy. The next Congress will be held in three years' time. The choice of place seems to lie between San Francisco and Paris.

Dr. Tredgold, who was medical expert to the Royal Commission on the Feeble-minded, has been expressing very gloomy views on the declining vitality of the race. He pointed out that the progressive fall in the death rate is due to preventive medicine and cannot therefore be taken as a test of vitality. During the past two generations the average rate of illness has been steadily increasing; this point is clearly demonstrated in the sickness statistics of the Friendly Societies, which show in the case of one society a rise of from 2.92 days of sickness per member in 1900 to 3.34 in 1911. Preventive medicine has also caused a decline in the rate of infant mortality, but the proportion of deaths due to innate constitutional defects is as high to-day as it was thirty-five years ago. Another alarming sign of deterioration is the increase in the number of the insane; in the last fifty years the figures have gone up from 35,000 to 133,000. Dr. Tredgold thinks that much of the present social and political unrest is an expression of increasing physical and mental incapacity and of a waning grit and independence.

The Hospital Sunday Fund has just issued its awards for the year 1912. The total

reached by the Fund this year is nearly £58,000 and this sum will be distributed among hospitals, dispensaries, and nursing associations, about 250 in number. Attention was drawn to the fact that the average cost for out-patient attendance has risen very considerably in the last few years, and a resolution was passed recommending that the question of allowance for out-patients be again investigated before next year's distribution. This makes more trouble for hospital secretaries.

The position as regards the administration of medical benefits under the National Insurance Act may be said to be in statu quo. Mr. Lloyd-George has again asked the doctors to wait and see what the actual regulations are. He says that they will find that night visits are put in a different category from day attendances, and that they will be safeguarded from interference with their medical duties by any body of laymen. He did not, however, hold out much hope of an increased rate of remuneration. while the medical members of the Advisory Committee nominated by the British Association have all sent in their resignations. but fourteen members who were nominated by the Government have refused to send in their resignations as they consider, for the present, it is their duty to remain members of the Committee.

Dr. George Ernest Morrison has been appointed Political Adviser to the President of the Chinese Republic. Born in Australia, he has traveled extensively in the East, and he made his name by the despatches he sent as special correspondent of the *Times*. In these despatches he showed so much accuracy of information and wisdom in forecasting events that he has had great influence on current opinion. China is to be congratulated on securing the services of an adviser of such conspicuous ability combined with a comprehensive knowledge of the country's affairs.

Another case of plague has been reported at Liverpool. The patient, a boy of about seven years, was operated on for appendicitis and a gland removed from the groin was found to contain plague bacilli. As the boy resided in a neighborhood inhabited by dock laborers the infection was probably brought from some ship. An infected rat was discovered in the street where the boy's relatives lived, and as there was evidence of flea bites on his body the infection was probably conveyed by fleas. The patient has been treated with serum and is making a good recovery.

The death of Miss Octavia Hill has left a big gap in the ranks of those who are endeavoring to improve the housing conditions More than fifty years ago, of the poor. while still a young girl, she started her crusade against the slums of London. that time very few people of her own class knew or cared anything about the housing conditions of the very poor. Miss Hill started in a modest way by securing here and there blocks of slum dwellings which she put into good repair and then managed herself, collecting the rents and encouraging the inhabitants to keep their rooms in a decent state of cleanliness. The many experiments which have been made in the erection of model dwellings were mainly inspired in their inception by the success which attended her efforts, and towards the end of her life she had the satisfaction of seeing an immense improvement in the conditions of slum dwellers. She was a great believer in the people helping themselves, and saving for times of distress and not relying on charity.

The miserable weather of the past few weeks has done an enormous amount of damage to the crops. Many of the fields are so beaten down that cutting will be a matter of difficulty. This August has succeeded in emulating last August in the matter of records, only in the opposite direction, for the amount of sunshine recorded has been abnormally low. The wail of the seaside landlady is loud, but the unfortunate holiday maker is also much to be pitied, for seaside lodgings do not usually provide the comforts necessary to face the rigors of an Arctic summer.

# THE THERAPEUTIC GAZETTE

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# ORIGINAL COMMUNICATIONS.

### THE TREATMENT OF INCONTINENCE OF URINE IN WOMEN.

BY HOWARD A. KELLY, M.D.,
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Incontinence of urine, or the escape of urine whether continuous or intermittent, is one of the most distressing maladies to which a woman who has previously had perfect control over this function can be subjected. Her person is wet with the irritating secretions, the genitals become inflamed, and the wet clothes are both an annoyance and a menace to health, causing repeated "colds." Incontinence calls for the wearing and constant changing of innumerable absorbent gauze pads, which are piled up in the bathroom, where they await the wash, and causing this common family room to smell like a pest-house. Nor does the patient herself escape from the disagreeable, distressing odor, which prevents her from going out into society and soon converts even a bright, active woman into a voluntary recluse.

Urinary incontinence is rare in young and in unmarried women. It is found preëminently in women who have borne children. when it is due either to a vesicovaginal fistula, which I do not now propose to discuss, or to an injury to the muscular apparatus at the neck of the bladder which normally controls the retention and the discharge of the urine. I find this last group of cases, of leakage without visible cause, quite common in my gynecological practice, and the sufferers come to me with one of the following histories: Soon after an unusually difficult labor, not infrequently assisted by forceps. the patient notices an involuntary escape of urine, which may vary all the way from a

constant dribbling to an occasional intermittent discharge occurring after the bladder has reached a certain degree of fulness. Sometimes the escape only takes place on coughing, sneezing, laughing, or on lifting something, or making some other slight straining exertion such as is required to mount the high step of a car. A little jet of urine escapes which wets the undergarments. This little intermittent incontinence is also often noted in women about the change of life, some time after the childbearing period, and in one who has never suffered in this way before.

The various methods up to the present time in vogue for the treatment of this distressing, fairly common minor malady, which continues as an annoyance throughout life without threatening either life or health, are usually utterly unsatisfactory and ineffective. Very often a doctor, finding a cystocele or a displacement of the uterus, is convinced that by correcting these difficulties he will cure his patient. He operates, giving her every assurance that she will be better of her malady, and disappointment is the invariable result.

Another common practice is to excise the vaginal tissues over the neck of the bladder and then bring the edges together so as to make the vagina taut under the sphincter region. Many patients will have had this operation performed if they have seen one or two specialists. This procedure also invariably ends in failure. Various operations have also been devised to pull up the urethra

and make it taut, or to draw the posterior urethral wall snugly up against the anterior wall. If the requisite pressure is secured, this operation is occasionally successful. Still more aggressive is the method of dissecting out the entire urethra and then twisting it as much as 180 degrees or more



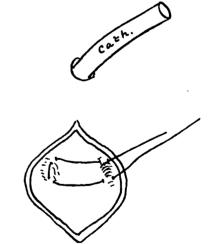
Mushroom catheter in place marking position of neck of bladder.

—a dangerous operation on account of the sloughing which sometimes follows. As I have already stated, I know of no one of the commonly accepted operations which yields a reasonable percentage of successes in relieving this distressing malady.

Many years ago I devised the following plan, which has been invariably successful in my hands, in cases in which there has been an injury to the muscles guarding the neck of the bladder without loss of substance. I exclude, therefore, those cases in which there has been a vesicovaginal fistula with destruction of the neck of the bladder, where the urethra has been subsequently reunited by a plastic operation to the bladder. The essential feature of my procedure is a dissection exposing the delicate sphincter muscle of the bladder and drawing its ends snugly together under the vaginal mucosa. This is done in the following manner: A mushroom catheter is passed into the bladder and left there until toward the close

of the operation. By moving the catheter to and fro a little and pulling on it, with the index-finger resting on the anterior vaginal wall, it is easy to locate the exact position of the neck of the bladder, which is the area to be included in the field of this delicate operation. A longitudinal incision is now made in the anterior wall of the vagina about an inch in length, across the neck of the bladder. The walls of the vagina are next carefully dissected off from the urethra and from the bladder, and the dissection is extended up for half an inch or more on either side, embracing the neck of the bladder. Great pains are constantly taken not to open the bladder or the urethra at any point. Such an accident has never happened to me in all my work in this class of cases. Not infrequently the dissection shows that the tissues of the bladder have been ruptured, leaving only the vesical mucosa and the vaginal walls intact.

The next step is to take from two to three fine linen or silk sutures and pass them as mattress sutures through the sphincter ends



Shows incision in anterior vaginal wall exposing area at neck of bladder where sphincter is weak and slik suture drawing sphincter fibers together, not yet tied.

and across the neck of the bladder from side to side, skipping over the central portion. I commonly first pass one suture, catching the muscle ends about half an inch apart and then tying the suture. I then pass another outside of this, drawing the tissues together over the first one. When the first suture is passed the mushroom

catheter is removed so as to avoid any difficulty in pulling it out, when all of the sutures have been passed and tied. In case there is any doubt as to whether the muscles of the neck of the bladder have been drawn



Operation completed and vaginal incision closed.

together, one or two more sutures may be applied above or below those already placed. It is sometimes so easy to demonstrate the thickened, rounded muscles at the neck of the bladder that they are then brought to-

gether in a very satisfactory manner. In other cases one simply has to grasp the thickened mass of tissue found just beyond the urethra and bring this snugly together from side to side.

After thus reuniting the sphincter muscles at the neck of the bladder, the tissues of the vaginal wall which have been lifted up may be resected and united, leaving a linear wound underlying the seat of the operation. It is my custom to keep the patient in bed a few days, and to have her void spontaneously from the first if she can. If she cannot do this a small, soft-rubber catheter may be passed at intervals of from four to six hours. In some instances it has been as long as from a week to ten days before the patient has been able to urinate unaided. I have never had a case which has not been able to urinate spontaneously. This operation has succeeded in every case in which I have applied it, and in no instance have the buried linen or silk sutures come out.

## A POSTGRADUATE CLINIC AT THE JEFFERSON HOSPITAL.

BY HOBART A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College and Physician to the Jefferson Hospital.

I intend to-day to show you a number of cases which I believe are of interest to the general practitioner, not because they are illustrative of rare conditions, but because they will enable me to call to your attention a number of points which I think are of interest. The first case is that of a man of fifty-four who entered the hospital because of dyspnea and edema of the lower extremities which have resulted from cardiac disease. The lesion, however, does not exist in the valves but chiefly involves the heart muscle, the first sound of which is distant and feeble. Furthermore, auscultation of his heart reveals at all times great irregularity both in rhythm and in the force of the apex beat. It is also interesting to note that on two occasions since he has been in the hospital he has suffered from a typical attack of the Stokes-Adams syndrome, and,

as in most cases of this character, in each instance has been so desperately ill that for a short time it did not seem possible for him to survive.

Without doubt too much importance has been attached to the discovery of valvular lesions in studying cases of heart disease. Although the pathologist has for years recognized the fact that in all cases of severe valvular disease there is also a certain amount of myocardial involvement, the general practitioner, who rarely sees autopsies, has failed to grasp the importance of this associated myocardial degeneration. As a matter of fact the condition of the myocardium is a much more important factor than the condition of the valves, because, as we all know, a valve cannot be repaired; its leak can only be compensated for by increased work on the part of the heart muscle, and manifestly such compensation cannot be developed if the heart muscle is not only impaired in function by fatigue but by organic change as well. Furthermore, organic change in the heart muscle cannot be overcome by the administration of remedies, except in so far as these remedies may by increasing the activity of the remaining healthy portions of the heart urge them to do more work and thereby provide an adequate circulation.

The recollection that the myocardium is more or less diseased in a large number of cases of cardiac failure with or without signs of valvular lesion is also of importance, because if the physician does not bear this in mind he will be unduly disappointed when he fails to get good results from the administration of drugs which he has been led to believe by his teachers or by his own experience to be advantageous when the circulation fails. If the valvular lesion is severe and the myocardial disease slight there is every reason to believe that rest and the proper administration of digitalis or strophanthus will produce excellent results, whereas, on the other hand, even if the valvular lesion is slight but the myocardial disease is severe these remedies must to a very large degree fail. A study of the condition of the heart muscle is of importance therefore not only in connection with an individual case, but in order that the physician may not get an incorrect view of the value of his remedies in other cases. Thus it is quite possible, if digitalis is given and good results do not follow, to get the impression that digitalis is after all not as valuable a remedy as it has been thought to be, when in reality it is deserving of its high repute in all cases in which the condition of the heart permits it to act.

The investigations which have been carried out during the last few years in connection with the anatomy and pathology of His's bundle, which, you will recall, is that strand of muscular tissue which connects the auricle to the ventricle, and over which impulses pass from the sinoauricular node for every cardiac contraction, still further emphasize the importance of studying the con-

dition of the cardiac muscle, since it is quite possible for nearly all the cardiac muscle to be anatomically perfect, and yet to be almost useless as to function if a small patch of degeneration involves this important These investigations have also shown that this strand is singularly prone to become affected in view of the fact that it is superficially placed, and lesions of the mitral leaflet, if they extend beyond its base. almost invariably nip at least some of the fibers of His's bundle, and therefore interfere more or less completely with the transmission of the impulse which is essential to proper cardiac action. In some instances disease of some of the fibers of this bundle partly impairs its ability to transmit impulses, so that cardiac irregularity develops. or, to use the technical term, partial "heartblock" is produced. In other instances, if the bundle is completely destroyed as to its function, that state which is known as complete heart-block ensues. With the occurrence of complete heart-block sudden death may end the development of the Stokes-Adams syndrome. In other instances, for reasons which are not very clear, the patient survives an attack, but the auricles and ventricles no longer contract in sequence but beat independently of one another, and this of course results in much embarrassment of the circulation.

It is interesting to note in this connection that digitalis very distinctly diminishes the activity of His's bundle in transmitting impulses across the auriculoventricular This seems to be in part due junction. to a direct influence of the digitalis the muscular fibers themselves and in part to the stimulating effect of digitalis upon the pneumogastric nerves, which in turn exercise an inhibitory influence upon the transmission of these impulses over this muscular strand. therefore at once evident that, like all drugs which have power for good, digitalis, if used wrongly, may possess great power for harm. In other words, in a case of partial heart-block the use of digitalis in full doses may be distinctly dangerous in that by adding its inhibitory influence to the impairment of function produced by disease it may alter a case of partial heart-block into one of complete heart-block, and doubtless some of the cases of sudden death which occur in patients with cardiac disease which are receiving full doses of digitalis are due to this cause.

For many years it has been known that belladonna or atropine given in full dose to cases of cardiac disease produces excellent results, but the exact method by which it acts has not been understood, although the physiological action of this drug has been thoroughly investigated. With our increased knowledge of the anatomy and function of His's bundle it becomes evident that belladonna or atropine does good in many cases of partial heart-block by enabling the impulses to pass from the auricle to the ventricle over His's bundle more readily than before, because the atropine by depressing the peripheral ends of the vagi removes the functional obstruction and leaves nothing but organic obstruction as a factor in the case. It is necessary, as a rule, in these cases to give much larger doses of atropine than are commonly employed; 1/100 of a grain every two or three hours for a few days may be necessary, or even more than this, and it is a noteworthy fact that very large doses in the twenty-four hours are much less prone to produce dryness of the mouth than smaller doses which are given because of timidity on the part of the practitioner. It is also to be recalled that although atropine is a powerful drug in one sense, death from overdoses of it is practically unknown, and therefore it can be given with impunity so far as actual danger is concerned. This is a subject which is so large and important that many clinics might be devoted to it.

In the short space of time which is allotted to the consideration of this particular case I cannot add anything further, but what I have said will I trust direct your attention to an important phase in the newer therapy of cardiac disease. This particular patient has been warned as to the necessity of absolute rest, avoidance of effort, as any sudden movement is prone to

produce an attack of heart-block. If any effort is necessary he should receive a full dose of atropine beforehand, and as strophanthus does not seem to have the inhibitory influence upon the passage of impulses over His's bundle that is possessed by digitalis it is the cardiac stimulant of choice in his case, being given in doses of 10 or 15 minims of the tincture three or four times a day. Unfortunately in this particular instance there is probably a wide-spread myocardial degeneration, and therefore much cannot be expected of any cardiac tonic.

The second case is that of a man of fiftyseven, who, notwithstanding his large physique, which would naturally be accompanied at his age by a protruding abdomen, is manifestly suffering from great enlargement of this portion of his body, and this notwithstanding the fact that within the last twenty-four hours he has been subjected to paracentesis abdominis, as a result of which he was relieved at one sitting of no less than twelve quarts of fluid. After this amount had been withdrawn it was evident, although his breathing was very much easier and the abdomen was much less tense, that there was a very large amount of fluid remaining. I decided that it was unwise to draw off any more liquid, since the removal of all pressure by fluid within a short period of time would probably result in an immediate outpouring of another lot of liquid, and would perhaps also interfere with the function of the abdominal viscera. As the cannula which was used for tapping him was of considerable size, I decided that the best thing to do was to permit him to drain through the opening made by this cannula. The opening was therefore not closed by an occlusive dressing, but simply covered with a number of layers of gauze and absorbent cotton and held in position with a Through the opening in the abdominal wall fluid has constantly flowed, and the resident physician and nurses feel confident that it has leaked an amount of fluid which is practically equivalent to the twelve quarts which was withdrawn by tap-The dressings, although they are very large and bulky, have had to be

changed every hour, and even when changed so frequently they have failed to retain the liquid, which has run down his sides and soaked his night-clothing and sheets and formed a puddle under him in the rubber blanket covering his bed, so that with every changing of his dressing the bed has also had to be changed, only to have him resaturate everything at the end of another hour. Notwithstanding the annoyance caused to the patient and the nurses by this method of treatment the physical state of the patient is excellent. He is entirely relieved of his distressing symptoms and is very happy over his improvement. (This patient continued to drain through the abdominal opening for a period of five days, the amount of liquid lost gradually decreasing until at the end of that time the dressings were dry and the wound had been closed by nature, at which time it was found that there was very little fluid left in the belly, and at the patient's request he was permitted to leave the hospital.)

The cause of this enormous accumulation of ascitic fluid is undoubtedly atrophic cirrhosis of the liver. Almost certainly the patient will have, sooner or later, a return of the fluid, and wil have to be tapped in all probability again and again, but it is a noteworthy fact that in some cases frequent tapping is followed by marked diminution in the rapidity of reaccumulation of fluid, and finally by cure so far as ascites is concerned, probably because a collateral circulation is established, or else the repeated tappings result in the outpouring of a certain amount of inflammatory material which aids in preventing transudation.

The third case is that of a woman of forty-two, who came to the hospital some weeks ago suffering from what seemed to be a fairly well-developed form of arthritis deformans in its early stages, the knees, ankles, elbows, and wrists being fixed, not completely, but sufficiently to make walking practically impossible. The spinal column was also fixed. The x-ray examination did not, however, show exostoses or atrophy of the articulating surfaces whereby mechanical fixation was induced. The skin

of the back of the hands was glossy, as it so often appears as an evidence of trophic disturbance in these cases. The only definite sign that there was an infection of the joints was the fact that every second or third day one or more joints would become puffy and more sensitive than before, and as these subsided others would become involved. There was no history of an attack of acute rheumatism. The patient had been treated at a number of hospitals with no benefit, and failed to respond to the use of the salicylates and iodides when under my observation. Although many of the symptoms indicated the early stages of true arthritis deformans, I finally decided to give her the new remedy which has been placed upon the market under the name of rheumatism phylacogen, although I felt it was hardly fair to the remedy to try it in a case in which evidences of ordinary acute rheumatism were so uncertain. The patient received 10 Cc. of the liquid in the neighborhood of the deltoid muscles for seven days. The first two or three doses were followed by the characteristic reaction in temperature, which rose to 103° or 104°; the patient also felt somewhat nauseated, and with the rise of temperature had a chill. The last three injections have not been followed by these reactions, and the patient is so much better that for the last two days she has been walking, and now insists upon going home, stating that she no longer has any pain and will not remain, although we would prefer that she be kept under observation for another week. (I regret to state that the patient has not made any further report as to her condition subsequent to leaving the hospital, but she was so much pleased with her improvement when she left that I think she would have returned later had she suffered from a relapse.)

I may add that I have used this product, which seemingly has little to recommend it from the standpoint of theory, in a number of cases of rheumatism, and in some of them the results have been almost equally good. In all of them there has been a very remarkable diminution in pain after the second injection.

### - THE TREATMENT OF OPHTHALMIA NEONATORUM.

BY AARON BRAV, M.D., PHILADELPHIA.

Every case of blindness in children resulting from ophthalmia neonatorum is a sad commentary that reflects discredit upon the medical profession. Ophthalmia in the new-born baby is both a preventable and curable disease, when treated intelligently and early, and no child, especially when delivered by a physician, should be allowed to pay the penalty for the sin of his father with the sacrifice of his evesight. In these days of medical advancement and preventive science we must not say, "The fathers have eaten sour grapes, and the children's teeth are set on edge," but rather make every effort that "the son shall not bear the iniquity of the father."

Ophthalmia neonatorum is still a frequent disease, although not as frequent as it used to be prior to the introduction of the prophylactic measure of Credé; and it is still the great contributor to the causation of blindness. Very often of course we must attribute the trouble to the ignorance of midwives, but not infrequently we also find it as a result of carelessness on the part of the attending physician.

Gonorrheal ophthalmia in the new-born must be considered as a very grave affection. If not treated early and intelligently it always causes total blindness and forever destroys the usefulness of the unfortunate and places him at the mercy and expense of the state.

Preventive Treatment.—When we recall the simple fact that it is estimated that in Europe there are about 300,000 cases of blindness, and in America about 35,000, as a result of this disease, the need of using all preventive means becomes self-evident. This can be done effectively without meddlesome governmental interference. Somehow, I cannot favor too much governmental authority over the affairs of men, excepting of course in cases in which there is danger to the rest of the community. I believe in the potency of education, and the spread of proper information on the subject by a properly constituted body—either the

board of health or the society for the conservation of vision—among the lay public would greatly tend to reduce the danger of blindness. Reporting all cases of ophthalmia in the new-born has been and still is advocated in many circles. This is a sound measure, employed properly for the purpose of obtaining information as to the frequency of the disease. This would also, I believe, prevent some laxity that may lurk with the obstetrician or midwife. Any further interference by the authorities, however, is unnecessary and is against the best interests of the profession.

The use of Credé's method as a prophylactic agent is of course a valuable aid in the prevention of this disease. been satisfactorily demonstrated and needs no repetition here. The solution need not be stronger than two per cent. I have seen recently a case in which a physician has instilled several drops of a five-per-cent solution of silver nitrate with very unpleasant results. Such strong solutions may cause a destruction of the superficial epithelium and thus open an avenue of corneal infection which may ultimately produce blindness. In private practice, no doubt, there is great laxity in the use of this preventive measure; many physicians do not think it necessary to use the Credé method. In fact they have delivered so many cases without ever meeting one case of ophthalmia that they naturally forget all about its existence until reminded unpleasantly by its occurrence. The majority of midwives do not use it. It would be well for some authoritative body to call the attention of midwives every six months, by properly prepared literature, to the necessity of using a two-per-cent solution of silver nitrate in every case, no matter whether they suspect gonorrhea or not. they could be supplied with the solution. They could also be instructed in the danger of this disease—that it is not merely a "cold in baby's eyes," and that as soon as they see any discharge or inflammation in the eye they should insist upon calling in a physician and explain to the parents the necessity of prompt action in the matter. In thus taking the midwife into our confidence I feel a large number of cases could be saved from blindness by early action. I think this would be productive of better results than meddlesome interference on the part of a young medical inspector, clothed in some garb of authority. Obstetrical cleanliness is of course a factor in reducing the number of cases of ophthalmia.

The eradication of that wide-spread social disease gonorrhea would of course be the ideal prophylactic measure. But is this possible? This difficult problem is at present receiving considerable attention from both the medical and the lay public, but no one has as yet been able to discover any possible means for the accomplishment of this desired end. Nor will various workers in this field ever unite. There is a variation in the degree of the sexual thermometer between those who seek the reform, and the eradication of the disease, and those who seek the gratification of the sexual impulse, that lies at the bottom of all the difficulties in dealing with this problem. It is easy. comparatively easy, for people who have reached the freezing point of their sexual thermometer to discuss calmly matters pertaining to the sexual question (and the psychologist may even suspect some sexual pleasure in the very discussion of the subject), but it is doubtful whether those whose sexual thermometer as a natural consequence of youth and vigor has risen to the boiling point will be guided in their sexual life by the opinion of those whose sexual life has reached the climacteric.

Early marriages would be the most rational method in dealing with the social aspect of the disease. Early marriages (without any medical certificate) would be the best preventive means, and public opinion could probably be molded in that direction. This is for the future to decide, however, while we are concerned with the present. The best prophylactic measure at present is education of the midwife and the public. The millenium has not yet

come. Preventive medicine, while it has accomplished very much indeed in its effort to eradicate disease, has until now not altogether been successful. Traces of the existence of ophthalmia and its serious consequences are still noticed everywhere. It still constitutes the principal element in the causation of blindness. It is true that not every case of ophthalmia in the new-born is of gonorrheal origin. Only in about seventy-five per cent will the gonococci be Scientifically speaking, only the presence of the gonococci in the conjunctival discharge justifies the diagnosis of gonorrheal ophthalmia. From the therapeutic standpoint, however, the attending physician should consider every case of conjunctival inflammation occurring within the first two weeks after birth in the new-born baby of gonorrheal origin, and at once institute such measures as will tend to save the child's eves. He should not wait for microscopic evidence to corroborate his suspicion. It is always best to err on the safe side and give the child the benefit of the doubt. Do not ask the father to acknowledge sinful conduct: no man is willing to give evidence that will incriminate himself. His admission is of very little help; his denial absolutely useless. Proceed at once as a clinician on clinical evidence and remember that the sight of the child is at stake. Overtreatment in these cases is apt to bring less dangerous results, in case the condition is non-gonorrheal in origin, than undertreatment would where the disease is caused by Neisser's gonococci. Overvigilance may inconvenience the family to some extent, especially when they cannot afford to have a trained nurse, but it will save many a little one from blindness and a subsequent life of misery. Always give a clear statement on the subject to the parents. Do not understate the condition. You must explain to the family the nature and danger of the disease and the necessity of proper

When called to see a case of ophthalmia in the new-born it is well if possible to determine the exact condition of the cornea so as to be able to give an intelligent prognosis

to the parents. One must, however, be very careful in his effort to inspect the cornea, for very often harm may be done. The lids must be separated carefully, and should be done only when they yield readily to the traction of the physician. Never try to force the lids open when there is marked swelling and blepharospasm. Wait a day or two, if necessary, until you have reduced the swelling, so that you may open the lids without injuring the cornea. Some nurses have a mischievous habit of forcing the lids open with a hairpin. Always caution her against it. Never use lid retractors to separate the lids; they are dangerous even in the hands of the expert. When on account of swelling of the lids and plepharospasm you find it advisable not to force the lids apart to enable you to inspect the cornea, explain to the parents the condition and tell them it will take a day or two before you can give a definite prognosis. As soon as the swelling has been reduced and the cornea inspected, the people can be informed of the probable outcome of the disease. Parents are very anxious in these cases for a statement as to the prognosis. If the cornea is found intact, and vigorous treatment can be followed out, the people can be informed with almost absolute certainty that the ultimate result will be good. there is a corneal involvement the prognosis must be considered grave as far as vision is This is absolutely necessary concerned. where the case is treated by a general practitioner, for in his hands corneal involvement during an attack of gonorrheal ophthalmia is absolutely sure to result in vision being entirely lost. In the hands of the specialist this will depend upon the degree of corneal involvement and surroundings of the case.

In treating a case of ophthalmia one must also remember that it requires about four weeks before the patient may be discharged as cured. Do not stop treatment too early. I have seen cases in which because of a general subsidence of symptoms the physician became lax in his effort after a few days' treatment, only to find an exacerbation with corneal involvement and the sub-

sequent loss of one eye. Every care in the management and technique counts in these cases and should be duly exercised. Cold compresses are an important feature in the treatment of the disease. They act as an antiphlogistic agent, reducing the inflammation and the swelling considerably and relieving the blepharospasm. Very often when the evelids cannot be separated at the first visit, after cold compresses have been applied for a day or two the spasm of the lids has ceased and the physician is able to inspect the cornea. These cold compressesmust be applied constantly day and night for the first three or four days, and they must be changed every five minutes. The discharge is usually lessened after cold compresses have been applied for a time. It is not probable that the reduction in the local temperature as a result of the cold compresses has any deleterious effect upon the gonococci, yet this much is sure, that their antiphlogistic power has a beneficial influence upon the treatment, probably by increasing the local resisting power of the part. Cold compresses, however, have another influence, and that is that they draw the parents' attention to the importance of the fact of the gravity of the disease. also acts as a good reminder for the application of medicinal agents, which might otherwise be omitted, several times during the day, and especially in the evening.

Considering the medicinal agents proper, it is well to call attention to the fact that it is not the kind of agent that you use that will determine the success or failure of your treatment, but how it is used.

Antiseptic lotions are essential, not so much for their germicidal as for their cleansing effect. It follows that no matter what agent is employed it is the frequency and the thoroughness with which you employ it that really do the work. The best cleansing agent in the beginning in my hands I find to be a 1:10,000 bichloride solution to irrigate the conjunctival sac every half-hour for the first two days. I do not rely upon the antiseptic value of the medicinal agent, but upon the frequency of its employment and upon its cleansing property. As a mat-

ter of fact, sterile water would accomplish the same result. It is after all the cleansing part we are after, so as to remove every vestige of discharge. I employ the above solution only with the knowledge that I probably have a germ-free solution as my irrigating medium. It is essential in the beginning to irrigate the conjunctival sac every half-hour, for in these cases it is surprising how quickly the discharge reforms. One must be careful to remove every bit of discharge and use the eye-wash as long as the desired end is obtained. I believe that the best way to accomplish this is with the eye-dropper. I do not employ the fountain syringe; it is not necessary, and very often more attention has to be paid to controlling the fountain syringe than to the thoroughness of the irrigation. Especially in private practice the best and most reliable medium is the eye-dropper. I have seen a case in consultation where the family used the fountain syringe, which was as filthy as it could possibly be, and had been used for all other purposes. The syringe had to be controlled, so that the physician who had to wash the case really only got the solution on the surface, not being able to open the lids, his efforts being concentrated on the control of the syringe. Needless to say the child was hopelessly blind when I saw the case.

The dictum in irrigating the eye must be wash, and wash, and wash again. After all, the frequent washing and removal of the discharge is the only safeguard against corneal infection. It is also advisable to give a 25-per-cent solution of argyrol to the family to instil immediately after washing the eye. The effect of argyrol is probably only due to the fact that, being a heavy substance, it goes all over, diffusing in the conjunctival sac and bringing up infected material to the surface, which of course is again washed away at the subsequent irrigation. It may have some antiseptic properties, but I do not rely upon it as the allactive germicide in the treatment of this disease.

The remedy par excellence from the point of view of a germicide is the old standby, silver nitrate. It has stood the test of time

and no effort has been able to displace it. Always remember silver nitrate in connection with ophthalmia neonatorum and never for once permit yourself to be misguided by some luring advertisement for a substitu-You do not need a substitute when tion. you can have the real article at a low price. Neither protargol nor argyrol, sophol, or collargol, or any other silver preparation, should be relied upon, although they may be employed as adjuncts in the treatment. Silver applications must be made by the physician himself, and should not be trusted to either the family or even the trained The application should be made nurse. once daily. Do not instil the solution into the conjunctival sac, but rather use an applicator—a toothpick wrapped with a piece of absorbent cotton is a good applicator. The strength of the silver solution should be one per cent. The application should be made with care. Evert the conjunctiva gently and just smear the conjunctival surface with the solution. Avoid touching the The silver soon forms an albuminate layer over the conjunctiva, imprisoning as it were in its meshes the gonococci, which are soon eliminated with the shedding of this albuminous layer in the discharges, and which can then be easily washed away during the process of irriga-After a few days' treatment the swelling of the conjunctiva is reduced and the discharge is lessened. I am in the habit of following up this treatment for one week. I then discontinue the bichloride solution and substitute a solution of zinc sulphate one grain to the ounce to irrigate the conjunctival sac every hour or two, as the case may require it. This is done for the reason that very often there is a mixed infection, which readily yields to the zinc solution. use this for one week, and continue the silver application and argyrol instillation. By this time the eye is usually in a quiet state. I order now a saturated solution of boric acid to irrigate the eyes three or four times daily for about two weeks, when the case is ready to be discharged. Occasionally, however, the condition, as a result of indifference, or neglect, may be complicated

with corneal involvement, when of course the treatment has to be changed.

Once corneal involvement is suspected the case should be turned over to the specialist, for corneal complications in ophthalmia neonatorum in the hands of the general practitioner are sure to result in total blindness. It is probably much easier to prevent corneal complications than to cure them. The experienced man, however, may obtain fairly good results and save useful vision even when there is corneal involvement. As soon as corneal ulceration is suspected the cold applications must be dispensed with and substituted by moist warm compresses. The cold compresses in such cases have a deleterious influence upon the corneal tissue, reducing its resisting power and thus favoring necrosis of the cornea. On the other hand, the warm moist compress stimulates the corneal tissue, increases its resisting power, and also acts as a nutrient to the It also reduces pain, which is always present in corneal ulceration. When the cornea is ulcerated it is best to use a simple non-irritating eye lotion. This lotion should be instilled preferably while somewhat warm. As in all other corneal diseases, atropine is an essential drug and should be instilled three times daily. application of silver nitrate should continue and is not contraindicated. If there is any ulceration, the best thing to do is to use iodoform powder daily dusted upon the ulcerated area. Dionin powder is a useful adjunct, especially when the ulcer is beginning to heal; it greatly reduces the opacity. Cauterization of the ulcer I find not to give the best result.

Operative procedure is contraindicated in these cases. In some cases the disease advances until the cornea is destroyed, perforation takes place, and a general ophthalmitis sets in. More favorable cases leave the eyeball, but with very large leucomas and vision absolutely nil.

Should these cases of ophthalmia be treated at home? Yes, under all circum-These children do better at home There is no need for than in the hospital. a special well-trained nurse, who very often is a mere ornament in the house. woman with common horse sense, if given proper instruction, can do the work. matter of fact hospitals do not admit such cases. If the child is admitted without its mother the difficulty of feeding is superadded to the disease; if the mother is admitted and has to stay there for a month or longer the inconvenience of the home must be considered, for there are probably other members at home that need the mother's Wherever possible I believe these cases should be treated at home, and they will have a good chance to recover.

917 SPRUCE STREET.

### THE TREATMENT OF BURNS BY LIQUOR CRESOLIS COMPOSITUS U. S. P.

BY R. P. STOOPS, A.B., M.D., CROSBYTON, TEXAS.

For several years after beginning the practice of medicine I was very much dissatisfied with the results which followed the treatment of burns by the usual methods. Picric acid solutions, the filthy carron oil, and several of the proprietary preparations had been tried with increasing disgust on my part, and I fear much unnecessary distress and delay in recovery for my patients. Consequently I feel under great obligations to Dr. C. E. Tennant for des-

cribing a method of treating burns which gives uniformly good results. I have now used liquor cresolis co. U. S. P. in upwards of a hundred cases and believe that its virtues should be more generally known by the medical profession.

In treating burns the objects to be attained are: (1) The relief of pain; (2) the prevention of pus infection; (3) the exclusion of the air and of anything tending to irritate the exposed tissues. Provided these indications are fulfilled and complications such as shock are prevented or met by

<sup>&</sup>lt;sup>1</sup>Journal of the American Medical Association, 1907, xlix, 1892.

appropriate remedies, burns of not too great extent will become covered by healthy skin, as far as the recuperative power of the surrounding healthy epithelium will permit.

The remedy is to be applied in the following manner:

- 1. Bathe affected surface with one-percent warm solution of liquor cresolis in water until débris is removed and parts are anesthetic.
  - 2. Puncture blebs and express serum.
- 3. Apply to burns strips of gauze, or in large burns strips of paraffin paper smeared with an abundance of vaselin containing one per cent of liquor cresolis co.
  - 4. Cover with cotton and bandage.
- 5. Allow dressing to remain four or five days, after which renew according to indications.

Both cresol and picric acid belong to the phenol group, and in treating burns discoloration of the urine must be watched for and treatment discontinued should it ap-Liquor cresolis co. used in the strength mentioned is much less apt to produce poisoning than saturated picric acid, which contains 1 part of the acid in 180 of water, and as the final dressing is 1 part cresol in 200 of vaselin the amount of absorption must be very little indeed. The liquor cresolis co. presents the following additional advantages: (1) It causes no pain on its first application. (2) It does not coagulate albumen exuded from the tissues or contained in the blebs. In one case treated by me with picric acid there was an extensive coagulation of blood and exudate on the surface of the wound, and the patient lost his life from the resulting suppuration.

One little patient coming to me was burned over the entire trunk and limbs, and although it was impossible to save his life I was able to relieve all his suffering by smearing the outside (not the inside, on account of seams) of his underclothing with the vaselin mixture above described, and applying it to the entire body by turning the garments wrong side out. I offer this suggestion to those who may be called to act in a similar emergency and will appreci-

ate the difficulty of keeping dressings and bandages in place on a restless and evermoving infant.

# TREATMENT OF INFECTED ABORTIONS.

HABERLE (Münch. med. Wochenschr., April 2, 1912) presents the results of his observations in a series of ninety-eight cases from Hofmeier's clinic in Würzburg. This series includes all cases in which fever was present before treatment was begun or in which decomposition of the secundines resulted. All the infected cases were included in the first half of pregnancy. Among the ninety-eight cases treated by radical means there were five deaths (5 per cent), and in the remaining ninety-three cases postoperative complications developed in three, including a pyosalpinx, a slight perimetric exudate, and a slight thrombophlebitis. In one-half of the total number of cases the temperature came down after the uterus was emptied and remained so. In thirtyone cases the temperature dropped to the normal in from one to three days. In eleven cases a slight fever lasted from four to eight days, and in three it persisted longer, although without any severe general symp-

The clinical results in this series of cases seem to support the principle of active therapeutic interference in this condition. In one of the fatal cases the curettage was preceded by numerous examinations before admission to the hospital; in the second, attempts had been made at cleaning out the uterus by a midwife; in the third, a protracted placenta previa abortion with severe anemia was present; in a fourth, there were evidences of a criminal abortion; and in the fifth, cardiac weakness developed soon after the operation. The author used a forceps or a dull curette in all the cases, followed by irrigation with lysol solution and the application of a 20-per-cent carbolic solution in alcohol.—American Journal of Obstetrics, July, 1912.

# EDITORIAL.

### THE UNTOWARD EFFECTS OF DRUGS.

On more than one occasion we have emphasized the fact that not infrequently the administration of a remedy which is strongly indicated to meet some condition of the patient produces side effects which are so unexpected and unlooked for that they greatly mislead the physician. As we have stated on a previous occasion, quinine and the iodides are the drugs which most commonly produce disagreeable collateral symptoms, but it is not to be forgotten that many other remedies occasionally do so. article published in the Medical Fortnightly of March 11, 1912, Burnett and Rover, after reminding us that the most common cause of toxic psychosis is alcoholism, consider several cases in which mental symptoms developed after the use of drugs which are not commonly considered as having much influence upon mental processes.

They report a case of atropine poisoning in a woman of forty-five who developed an argumentative, maniacal, talkative state of mind which continued for three days and During this time she had visions nights. and imperative conceptions, and finally became violent. Her pupils were widely dilated, her expression was staring, and her skin was clammy. Scarcely any part of her body was without bruises because of her violence, but the throat was not dry. Later it was found that she had taken large and repeated doses of atropine. In another instance a woman of forty years, who had been accustomed to taking very large doses of morphine, developed a condition somewhat akin to that just described, in that the patient became excessively talkative, and also developed delusions of grandeur. The pupils were dilated, the pulse rapid, and finally a deep stuporous sleep developed. The husband of the patient, who was a physician, believed all these symptoms to be due to morphine, but a drop of the patient's urine produced mydriasis in the eyes of a cat, and investigation revealed the fact that the woman had by mistake used a solution

of atropine hypodermically instead of morphine.

Burnett and Royer state that they can only find two such cases on record, which were reported by Burnett in the *Medical Herald* for June, 1911, but some months ago we called attention in a leading article to this matter and quoted an article of Dr. Starr, of New York, in which the symptoms observed were practically identical with those now described.

In another instance which they report, a young man of twenty-nine years, of powerful physique, was thought to be suffering from general paresis. He was, to use their words, "hideously cheerful, wild, staring, maniacal, and violent in a whirlwind of momentary periods." He had marked delusions of grandeur. In this instance it was found that he had taken no less than one pint of absinthe between 2 and 5 P.M. on an empty stomach.

Two cases of veronal poisoning are also recorded in which the continued use of veronal produced mental hebetude, thickness of speech, and finally violence. One of these patients, a woman, threatened injury to her husband. Later she was found in a deep stupor and could not be aroused, having evidently taken a very large dose of Twenty-four hours later she became exceedingly violent, abusive, delirious, and required restraint. The delirium persisted for more than two weeks, and gradually faded into confused delusions. After a time complete convalescence ensued. although three months were required for the restoration of health. In another case a patient took 60 grains of veronal within a few hours and became comatose for a period of thirty hours. On being aroused she became very violent, beat the nurse, destroyed the furniture, and smashed the windows. The statement that she had been violently treated was made with such positiveness that it was difficult to believe that her statements were not true. Gradual improvement took place when under restraint, but for a long time she had the delusion that she was being abused to such an extent that a damage suit was brought.

Many years ago we called attention in the original pages of the GAZETTE, and in editorial notes, to the fact that the bromides sometimes produced mental disorders quite the reverse of the mental hebetude which commonly develops when they are freely administered. We made a collective investigation upon this subject, which showed how much the bromides were abused, and quoted cases reported by Dr. S. Weir Mitchell, in which violent forms of delirium had developed when the bromides were freely given. Burnett and Royer have not referred to these cases, but report others. One woman of thirty-five years, under their care, took no less than 1100 grains of bromide of sodium in solution in less than twenty-four hours. She became stuporous and finally unconscious, with muttering delirium at intervals, involuntary urination and defecation. The temperature was 97° and the pulse bad. When the stupor was recovered from she developed maniacal paroxysms, and later confused delusions and hallucinations, hearing voices and seeing persons that were not present. They also record the case of a man of forty-four years who, after an alcoholic debauch, took no less than four ounces of bromide. He became delirious, violent, and finally stuporous, remaining unconscious for forty-eight hours, during which time carphologia and delirium with fecal and urinary incontinence developed. When first seen by Burnett he was muttering and picking at the bedclothes, the mouth was foul, and the diagnosis was "bromo-delirium." The tongue deviated to the left, there was some tendency to nystagmus, and so much incoördination that he was unable to walk or stand alone. He had lack of orientation, but eventually made a good recovery. So, too, a man of thirtyeight years took no less than 480 grains a day until 3360 grains were taken in a week. The facial muscles lost power so that expression disappeared, the pupils were dilated but reacted to light and accommodation, the deep reflexes were plus. His hallucination consisted in thinking a dog was following him. He thought he saw the dog, which he accurately described. The dog at times attempted to attack him. He showed much fear and maniacal delirium. Pressure on the eyeball caused him to see two black dogs and a man in uniform. He also had disturbance of orientation and loss of time sense. Recovery ultimately ensued.

The method of treatment to be employed in these cases consists in utilizing measures which will aid in the rapid elimination of the drug which has produced the symptoms, and the employment of drugs which are antagonistic to the symptoms produced by the poisons ingested. Purgation, enteroclysis, electric cabinet baths and hot packs are also advantageous.

# HEDONAL AS A GENERAL ANESTHETIC.

Although most surgeons consider that ether and chloroform are satisfactory anesthetics, they are nevertheless conscious of the fact that they do not fully meet their requirements, and so we find from time to time that investigations are carried out with the object of producing anesthesia by other means than by their use. Page has recently reported in the Lancet of May 11, 1912, his experience with hedonal, and states that it has been quite largely employed in Russia and Germany as a surgical anesthetic when administered intravenously. In 1911 Federoff reported 530 cases collected from three clinics, the claim being made that no death was directly due to the anesthetic. apparatus which is now commonly employed for the injection of salvarsan may be used, 0.75-per-cent solution of hedonal in normal saline solution being employed for the injection. The fluid having been put in the flask is conveyed into the needle, which is inserted into a vein, through a sterile rubber tube, and for an operation lasting as long as two hours five such injections are usually required, the total amount of fluid varying from 325 to 1100 Cc. The only complication which arises seems to be respiratory

depression, and this depression does not seem to be met unless the infusion is made too rapidly. Federoff states that respiration was affected in only eight out of 530 cases. and it is also claimed that vomiting and headache are rarely met with during the So, too, evidences of renal irritation are practically unknown. Page states that this method of producing anesthesia has been used in St. Thomas's Hospital in about 200 cases. Instead of using intermittent injections he has employed continuous gravity-fed infusion and thinks he obtains better results. Before the fluid which is injected is actually used it is filtered, boiled for five minutes, and stored in sterile flasks. Immediately before its employment it is heated to 140° Fahr., so that when it slowly flows from the needle its temperature may be practically identical with that of the blood. Usually by the time that the infusion commences the temperature of the fluid will have materially diminished by its being chilled off, but if this is not the case some cold fluid is poured in until the temperature is 115° Fahr.

Within a minute or so after the commencement of the injection the patient becomes drowsy, yawns, has a feeling of warmth and well-being, the face flushes, and the patient rests comfortably; but if the infusion be too rapid some cyanosis may develop. Deep, natural sleep now seems to be present, which merges gradually into general anesthesia; the deep reflexes are absent, the corneal reflexes absent or sluggish; the pupil usually contracts; and the muscles become slack. In none of Page's cases has there been any struggling, and only some incoherent talk during induction. respirations usually become quiet and regular. When anesthesia is complete there may be a tendency on the part of the tongue to fall backward.

In Page's cases as much as 1750 Cc. have been given within an hour, but he asserts that old persons require less of the drug than younger ones of the same body weight. Page asserts that cyanosis is the only symptom which has given him cause for alarm. He believes that there are no

objections to the method in itself, but thinks that there are some contraindications, such, for example, as engorgement of the lungs due to failure of the right heart, and in cases of nephritis when the kidneys are unable to eliminate the drug. He does not think that arterial sclerosis and high bloodpressure are absolute contraindications. He also states that a smaller amount of the drug can be used if morphine and atropine or scopolamine are given hypodermically beforehand. Although no deaths occurred in his experience during the time that the administration of the drug was continued. nevertheless five patients out of 70 died at some period subsequent to the operation while still in the hospital. One of these occurred three weeks after amputation, when an aged woman died suddenly from pulmonary embolism. Another woman, seventy-three years of age, with senile gangrene of the feet, died one month after amputation from spreading gangrene of the remaining leg. A man of seventy-one, with diabetic gangrene of the feet, was subjected to amputation, although he was drowsy before operation. He died in coma thirtytwo hours afterward. The third case died one month after cholecystostomy as a result of a suppurative cholangitis, suppurating cyst of the liver, empyema, and general peritonitis; and the fifth case, a woman of sixtyfive, with carcinoma of the rectum, who was operated upon for acute intestinal obstruction, and who was in a state of extreme collapse before the operation, improved temporarily but sank again afterward and died seven hours later. None of these deaths can be fairly charged to the hedonal.

Page has summarized his views in regard to this matter as follows:

- 1. The intravenous infusion of a 0.75-per-cent solution of hedonal in normal saline solution produces general anesthesia.
- 2. Administration of the solution by continuous infusion gives good results.
- 3. The anesthesia is steady and complete, is associated with great relaxation of the muscles, and has a wide margin of safety.
  - 4. During anesthesia the respiration re-

mains steady and the pulse good; the blood-pressure usually falls slightly.

- 5. The induction of anesthesia is subjectively very pleasant to the patient; little if any excitement occurs during this stage.
- 6. Anesthesia is established in from five to ten minutes; the rate of inflow of the fluid should be from 50 to 150 Cc. to the minute; a slower rate greatly delays the induction of anesthesia, a more rapid one may produce signs of cyanosis.
- 7. The comparatively slow rate at which the drug is excreted makes it impossible to maintain anesthesia for prolonged periods without infusing a very large volume of fluid.
- 8. The stage of anesthesia usually merges into one of deep sleep, which lasts from six to twelve hours.
- 9. Vomiting or headache at the postoperative period is uncommon.
  - 10. Pulmonary complications are rare.
- 11. The dangers which may arise during anesthesia are respiratory depression from an overdose of the drug and respiratory obstruction from falling back of the tongue and jaw.
- 12. The method is very suitable for operations about the head and neck; the muscular relaxation and quietness of the respiratory movements also make it a valuable anesthetic for operations in the upper part of the abdomen.

#### POISONING BY BORACIC ACID.

Boracic acid is so generally employed in such varying quantities in such a host of conditions and produces ill effects so rarely that many physicians are unaware of the fact that the drug is capable of producing poisoning. Nevertheless Sanders in the British Medical Journal of March 16, 1912, reports a case, and quotes two reported by Rinehart in the British Medical Journal for 1901, and by Wood, of Philadelphia, an abstract of whose paper appeared in the British Medical Journal for the same year. Rinehart's cases were as follows: Five grains of boric acid were given by the mouth

every four hours. Two days later there followed extreme weakness and erythematous rash, with papules and vesicles on the back of the hands and a very weak pulse. These symptoms, which disappeared on withdrawing the drug and reappeared on resuming it, were so severe that Rinehart thinks the patient would have died had the drug not been stopped. In the second case 5 grains of boracic acid given every four hours produced at the end of ten days very similar symptoms and albuminuria in addition. In Wood's cases death occurred, preceded by an erythematous rash and collapse.

The case reported by Sanders was that of a man from Canton, China, who had been ill with dysentery for several months, passing large quantities of blood in his stools. He was treated by a mixture of magnesium and sodium sulphate, and after two days received a single daily rectal wash of boric acid and warm water. This treatment was continued for over three weeks, and the patient was improving greatly. At this time a rash developed all over the body looking like a bromide rash, developing particularly on the extensor surfaces. The rectal injections were at once discontinued and plain water substituted. He speedily became restless and noisy, so that he had to be isolated. The following day the rash was more profuse, the spots were hard, shotlike, and purpuric. He was delirious, his pulse was feeble, he suffered from insomnia. and paraldehyde produced no effect. A few days later albuminuria developed, but this only lasted a short time, and recovery finally occurred. The shot-like spots under the skin, as Sanders states, could readily have been mistaken for variola had the question of drug poisoning not been carefully considered.

In the British Medical Journal of April 13, 1912, Vaughan Harley, however, raises the question as to whether Sanders's cases were really due to boracic acid. He quotes Cushny as stating that the symptoms of poisoning with this substance are uneasiness in the abdomen, vomiting, diarrhea, dryness of the throat, difficulty in swallowing, sleep-lessness, great muscular weakness and de-

pression, dimness of sight and headache, and in some cases collapse and death. In Harley's cases he believes that if the boracic acid was really responsible for the symptoms it was due to some idiosyncrasy, since hundreds of cases have received large and frequently repeated rectal colonic irrigations with this drug. In a case of his own, which was evidently suffering from a mucomembranous enteritis, the bowel was washed out with a one-half-saturated solution of boracic acid in the morning, with the result that a few hours later she became excitable. complained of irritation of the skin, which became erythematous, and finally papules developed. These symptoms disappeared in the course of two days, the injections being discontinued, but recurred when the douche was again employed. In another case of a similar nature with mental excitement and intense irritation of the skin. urticaria developed, and the skin symptoms lasted four days. In a third case, an elderly man suffering from a dilated colon received a boracic acid injection, and he also suffered from a train of symptoms identical with the other. Notwithstanding the fact that mental irritability was present in all the cases, he believes that it was hardly to be considered as a result of the boracic acid, as the patient suffered from neurasthenia and easily manifested mental excitement at any cause. The fact, too, that these symptoms have developed in other patients when no boracic acid was used by injection leads him to believe that the boracic acid was not really respon-Harley's belief is that it is due to a toxemia resulting from the sudden absorption of the products of putrefaction from the intestine.

#### TUBERCULOUS RHEUMATISM.

It is widely accepted by the medical profession that the term rheumatism is one used to cloak ignorance as to cause rather than to describe a specific disease, and that in its varying clinical manifestations it should be attributed to either one or a variety of toxic infectious agents. Lyle

(Annals of Surgery, May, 1912) calls attention to the fact that a search for the specific cause has led to the partial dismemberment of acute rheumatism and that gonorrheal rheumatism was the first child from the loins of this time-honored parent. Diphtheric, pneumonial and scarlatinal rheumatism are also recognized, hence tuberculosis, the commonest of all toxic infectious disshould not be held blameless. Poncet argues that, if during the course gonorrheal urethritis a patient attack of acute rheumatism which is assumed to be gonorrheal in nature, it seems entirely logical to suppose that articular manifestations arising in tubercular cases may be of a tubercular nature. He believes that tuberculosis is the very commonest cause of rheumatism. and it is apparently well proved in his cases. Lyle states that Bonnet in 1845 called attention to the transformation of rheumatic joints into true white swellings, whilst Charcot about ten years later called attention to the greater mortality from pulmonary tuberculosis among patients suffering from chronic rheumatism. Fuller somewhat later observed that in a series of 110 cases of arthritis deformans 23 per cent had lost either a father or mother, a brother or a sister by phthisis. To Poncet must be given the credit of having made a thorough study of his topic and having established it as a distinct morbid entity. He holds that tuberculosis is not one in its manifestations. Besides producing a specific picture, it can produce the signs of an ordinary inflammation such as congestion, exudation, sclerosis, etc., which exhibits nothing specific, but is similar to that resulting from other infec-To this form of tubercular inflammation he applies the term tubercular rheumatism, as distinguished from specific tuberculosis.

Poncet holds that from 5 to 17 per cent of patients with active tuberculosis and 20 per cent of the chronic cases have or have had tubercular rheumatism—these figures holding true for both surgical and medical forms of the disease. Reversing the process and examining the figures for tuber-

culosis he finds the figures substantially the In chronic deforming rheumatism of old age the percentage is doubled-that is. 40 to 50 per cent of these cases can be shown to have tubercular lesions. figures are the result of numerous observations by various investigators. rence of an acute synovitis in the tubercular joint after the injection of tuberculin is well known; a similar reaction can be obtained in some joints supposedly rheumatic; it has also been obtained in cases which have come to autopsy, in which no tubercular lesions were found in the joint, but tubercular lesions were found elsewhere. Animal experimentation has shown it possible to produce a form of synovitis by an intravenous injection of tubercular material, and that by the injection of certain cultures of bacillus of Koch the common lesions of inflammation can be produced in contradistinction to typical tubercular lesions.

Whether the tubercular inflammation is caused by the pure toxins or by the tubercle bacillus it is impossible to say. As to the forms of the disease there are certain cases characterized by arthralgia showing slight shifting pains with a predilection for the larger joints. They are frequently mistaken for growing pains or for tubercular arthritis: this latter mistake undoubtedly accounts for some of the marvelously rapid cures of tubercular hips and spines. There is further an acute or subacute tubercular rheumatism characterized by the rapid involvement of one or several articulations, giving a more or less perfect picture of acute articular rheumatism. It may be primary or secondary to a visceral tuberculosis. From the nature of things the primary form is exceedingly difficult to diagnose.

A grave general condition with a moderate involvement is a presumption in favor of tubercular rheumatism. When the disease is secondary it is noteworthy that there is a constant relationship between the visceral and articular attacks; when one advances the other recedes. The use of salicylates is entirely valueless, indeed harmful. The primary focus in the lungs is of a fibroid character and advances very slowly. The

chronic tubercular rheumatism encountered more frequently in the second period of life may be primary or secondary to repeated attacks of acute tubercular rheumatism. Four clinical varieties are distinguished: deforming tubercular polyarthritis, chronic polysynovitis, dry senile arthritis, ankylosing tubercular rheumatism. It is noteworthy that a true rheumatism never leads to an ankylosis. It is commonly believed that gonorrheal rheumatism presents to an extraordinary degree the power of producing an ankylosis without the formation of pus. This Poncet denies, holding that many of the so-called ankyloses are tubercular, and calling attention to the variety of ankylosis in the spinal column.

Ankylosing tubercular rheumatism is associated with a mild chronic visceral tuberculosis, rather than with an active process, and a careful search is often required to demonstrate these latent lesions. As a rule there is a tubercular family history. Children are often attacked. The vertebral form is confined to maturity and old age.

Lorenz has reported on the frequency of the occurrence of rigidity of the spine and its relation to pulmonary tuberculosis. The following figures were the results of investigations carried out at Bad Oppelsdorf: Of 667 cases of spinal rigidity, 174 cases (24 per cent) had pulmonary stiff spines, and of these 68 (40.5 per cent) had phthisis. Of the 174 tubercular cases, 68 (39 per cent) had stiff spines. According to Mosse, 70 per cent of scoliotics in the young are tubercular. Lyle further describes a series of lesions which he terms abarticular, attributable to a toxin rather than to a bacillus, since they are as a rule fleeting and widely distributed. These cardiac, pleural, cerebral, glandular, gastrointestinal, genitourinary, cutaneous, ocular, and tendofibrinous manifestations are described.

Diagnosis is a matter of exclusion and depends in part upon a study of the history and examination of the urethral secretions, and the complement deviation tests for gonorrhea should be applied. All the usual laboratory tests for tuberculosis can be tried, and Poncet favors Arloing and Courmant's

serodiagnostic agglutination test, and states that in the presence of rheumatism the first thing we should do is to demonstrate that it is not tubercular. The therapeutic indications are of major moment, because, if the case be tubercular, instead of placing the patient on a restricted diet and dosing him with useless digestion-destroying salicylates, he should be subject to a regimen which has been proven to be most serviceable to the

tuberculous—i.e., by fresh air, forced feeding, tonics, and carefully graduated exercises. Locally the affected joint should be protected in the hope of preventing a true tubercular arthritis. Indeed, all active forms should be regarded as pretubercular. Ankylosis and deformity should be guarded against; if already present, they should be treated according to general surgical principles.

### REPORTS ON THERAPEUTIC PROGRESS.

#### NEOSALVARSAN.

The British Medical Journal of June 8, 1912, gives this information as to the new drug neosalvarsan:

Two years have passed since the first report on salvarsan was published by Alt, and since that time Ehrlich has been experimenting continuously to find an improved form of this medicament. E. Schreiber now reports on a substitution product of salvarsan which bears the number 914 in Ehrlich's laboratories. This is neosalvar-It is a condensation product of formaldehyde sulphoxylate of sodium and salvarsan. The former is anchored to one of the two amido groups of the arsenobenzol. The compound is a yellowish powder freely soluble in water, yielding a neutral solution, which is easily made; sterilized distilled water at about 20° C. is added to the powder, and the vessel containing it is then gently swayed once or twice; violent shaking must be avoided, as this oxidizes the drug. If saline solution is used, this must not be stronger than 0.4 per cent, since a turbidity is formed with stronger solutions. An istotonic solution can be prepared by dissolving 0.8 gramme in 22 Cc. of water, but Schreiber prefers from 0.6 to 1.5 grammes dissolved in from 200 to 250 Cc. of water. Since the formaldehyde sulphoxylate is approximately one-third of the compound, the dose of neosalvarsan must be 1.5 grammes, to correspond to 1 gramme of salvarsan. On the other hand, it has been found that rabbits tolerate nearly three times the dose of neosalvarsan, and it is also less toxic for mice. Mice infected with the spirilla of relapsing fever and the spirochætæ of nagana were treated with neosalvarsan, and it was found that the new preparation was more active toward these organisms than salvarsan.

Schreiber has tried the compound on 230 patients, and has given some 1200 injections, some intravenously and some intramuscularly. He gives doses of 1.5 grammes to men and 1.2 grammes to women, but usually begins with a smaller dose and increases it at each injection. The dose, however, must be varied with the constitution of the patient. The therapeutic effects appear to be the same as those of salvarsan, but he is under the impression that the new compound is more active, and that undesirable effects occur less frequently than with salvarsan. While the latter frequently causes gastric disturbance (vomiting, etc.), these symptoms were scarcely ever seen after the use of neosalvarsan. The fact that the solution has a neutral reaction is a great advantage, inasmuch as no troublesome local infiltration occurs after injection. Albuminuria was not met with, although at times urobilin was found in the urine. A moderate leucocytosis occurred in certain cases. Of 97 of the patients in whom Wassermann's reaction was controlled, 61 showed a negative test after the injection, and 36 a positive one. He adds that these cases included some early patients, in whom the doses were too small. Owing to the neutral

reaction intramuscular injections may be given, provided the solution is really injected into the muscle. He prefers intravenous injections.

In summing up the results of his experience of Ehrlich's latest remedy, the writer points out that it can be tolerated in larger doses than salvarsan, that it is at least as active an agent, and that it is better adapted to intramuscular injections than salvarsan.

### THE OFFICE TREATMENT OF RECTAL DISEASES.

CHASSAIGNAC in the New Orleans Medical and Surgical Journal for June, 1912, discusses this topic. He uses as an illustration of what he means the fact that we hear a great deal about office treatment and what can be done in cases of hemorrhoids. must be well understood at the outset, however, that he does not mean to say that we can be prepared at all times to treat hemorrhoids in the way he describes. A certain proportion of cases are such that, if we wish to do justice to them, we can consider nothing else but a well-devised and carefully carried out surgical operation. just as we must, on the one hand, dispose of some of these cases by operation, and, on the other hand, taking the other extreme, we can relieve a great number with palliative treatment, there are many types of cases between the two which we can dispose of in the office. If among ourselves we want to be frank, we would have to consider their treatment as a surgical one, after There would be several slight operations, instead of one operation. He then describes a method which will be very useful when we come across the right sort of conditions and in the kind of patient who declares he does not want to be operated on. We know that some patients introduce the subject in that way. They announce their own diagnosis, or the diagnosis of the family physician, and say, "I want you to treat me, but I don't want to be operated on." Many of these we can relieve by office treatment. Those who want to be captious may say that, instead of performing one operation, we perform several. Nevertheless, a patient usually does not consider it an operation if he can come to the office and have some treatment—surgical treatment—done from time to time, and is not confined to a hospital, and does not lose any time from his work. He does not consider the fact that we have performed several operations instead of one.

An important point in all of this surgical work, performed in the office, depends upon being able to secure prompt and sufficient analgesia, and Chassaignac has found that a combination which is used in different proportions, especially by oculists, serves very well for this purpose. He uses equal parts of a one-per-cent solution of cocaine, of a 1-to-1000 solution of adrenalin chloride, and of normal salt solution, which will make a very mild cocaine solution, really a third of one per cent, because we have the three substances in equal parts. It makes a 1-to-3000 of adrenalin chloride, the rest being salt solution. He selected this after trying a good many different proportions and other combinations, because this is sufficient to produce pronounced analgesia on the one hand, and on the other hand it can be used to quite a reasonable extent without any fear of toxic effect. adrenalin increases the local effect of the cocaine and diminishes the chances of any large amount of absorption through the constringing effect on the blood-vessels, so that we can easily have a syringe of twenty or even thirty minims, and use that without fear of producing toxic effects because we are using very little cocaine. By injecting this where we want to do the work we get the effect of the cocaine and of the adrenalin, which limits bleeding, that might disturb our work, and at the same time get the effect of mechanical distention by the fluid in the tissues.

With this, in a moderate case of hemorrhoids, he can outline briefly a method which he thinks will be found of service in patients who are not too badly affected to make it necessary to do a radical operation. Suppose the hemorrhoid is of medium size, if it can be brought down by the patient

when at stool, as is often the case, he can attempt to have a stool at the office, or allow the hemorrhoid to protrude after having had a stool previous to coming to the office. If that is not the case, with a fenestrated speculum we are able, through a moderate amount of dilatation gradually brought on, to get the hemorrhoid to protrude through either fenestrum of the speculum. The idea is then to inject a few minims of the analgesic solution at about the center of the tumor, according to the size; sometimes two or three, maybe half a dozen, minims will be enough to distend the tumor sufficiently to make it easily reachable and blanched, on account of the effect of the cocaine and the adrenalin, so that we can easily grasp it, or a part of it, if it is too large, with a small rat-tooth forceps, and by means of the galvanocautery slowly sear off the entire tumor, if it has a pedicle; or, if it has no pedicle, we can even sear it off piece by piece till we get to the level of the healthy mucous membrane. If a patient has a number of these tumors on the one hand, or if, on the other hand, the tumor is too large to be disposed of in this manner at one sitting, then a section only of it may be removed at one sit-

If we are careful with the galvanocautery point to see that it is not heated too hot, and have patience enough to sear rather slowly through the tissues, there will not be any danger of bleeding at the time or subsequently, nor will there be any chance of infection, because the tissues are closed long enough after the searing to prevent anything of that sort. It is, on a small scale, a modification of the clamp and cautery operation.

If the tumor is too large to remove at one sitting, then the best thing is to make an application of carbolated vaselin thoroughly to the part and reduce it. Chassaignac usually prefers to let a patient, after this, take one or two, or more, small doses of paregoric, enough to keep the bowels quiet for twenty-four or forty-eight hours, and follow this by a mild purgative. It is surprising to see how little patients feel this manipulation. They do not seem to suffer

from the small operation. There is no pain following it, to any extent, and the patient avoids being laid up in a hospital or infirmary. This work can be done only in selected cases—that is, in tumors of moderate intensity, and those that have lasted a reasonable time.

Chassaignac has used this merely as an illustration of numerous procedures that can be resorted to legitimately and safely, and with satisfactory results, thereby ridding patients of the dread of applying for treatment from the idea that a surgical operation must be performed. Of course, when it comes to the matter of suggesting a remedy, we ought not to do a thing that is not clearly indicated, simply because quacks promise something on the one hand, or the patient is afraid of something on the other. But there is a certain proportion of cases we can treat in the manner described without sacrificing principle, while obtaining results to the satisfaction of the patient.

### SCHAFER'S VACCINE TREATMENT OF RHEUMATISM.

The Journal of the Missouri State Medical Association for June, 1912, contains an article by CRANDALL on this subject. His experience with phylacogen, or Schafer's vaccine, indicates that it rapidly relieves many rheumatic conditions, especially in the acute and subacute types, and in some of the chronic types which show little or no destruction of joint surfaces. It is also valuable in relieving pain and making more comfortable the more severe types of arthritis deformans. From his observations it is still too early to draw conclusions as to the permanency of the results. Schafer, however, affirms the complete and protracted relief of most cases if the remedy is given thoroughly, especially in the acute and recurrent types. In none of Crandall's cases did he observe any heart lesions developing incident to the immediate attack, and the few which showed heart lesions from rheumatism or other causes were not disturbed by the treatment. With uncompensated lesions, however, it may be neces-

sary to withhold treatment for a time or give it very carefully. Two patients showed some temporary dyspnea during the early part of the reaction, due possibly to too large an initial dose, too rapid administration, or an idiosyncrasy for the remedy. This symptom with one patient followed his first two injections, but not in the subsequent injections, which gave him complete relief from the rheumatic symptoms; and with the other so slight as to be of little moment. Examination of the urine showed no disturbance, except in one case which had marked acute nephritis, and the increase of the kidney disturbance in this case was no more than might have occurred from the high temperature. rheumatic symptoms were completely relieved after two doses, and after a rest of a few days, with attention to the kidneys. more was given to still further protect his heart and kidneys from rheumatic irritation.

No delirium has been observed with the high temperatures, which have sometimes reached 105°, and in one case 106.8°, usually being higher after the first injection than after subsequent ones, even though the dose is gradually increased. The early reactions appear to be an index to the degree and rapidity of recovery, a good reaction being favorable. Herpes labialis was observed in several cases. Patients receiving the subcutaneous injections complained more of the treatment than those who received the intravenous injections. which Crandall believes is due to the local reactions. It appears advisable to tell the patient when beginning injections that they may have a chill and fever following injections, otherwise the reaction may be somewhat disturbing to them. For the comfort of the patient hot blankets were used during the chilling stage, and ice-bag with cold water to drink during the hot stage. All injections, subcutaneous and intravenous, were given with the patients in bed, where they were kept until the reactions subsided. As the joints improved the patients were allowed to be up some of the time between the injections. As a rule Crandall believes the patients stood the reactions as well as they would stand equally severe malarial paroxysms. He is endeavoring to keep track of recovered patients to ascertain the possibility of recurrences.

He has not observed any special contraindication to the use of the remedy, and he is assured that no anaphylaxis has ever occurred in animal experiments with the remedy. Other than some dyspnea in two cases and a temporary aggravation of a nephritis in another case, apparently due to the high temperature of the reaction, all of which cases recovered rapidly, no untoward effects were observed. He believes it is important to give sufficient doses to prevent relapse. He observed after two or three doses, in a few cases, apparent cure, with, however, some tendency to soreness of joints if injections were suspended for two or three days; and later, continuing injections to a total of five to seven, or until the reactions were slight or ceased, no further trouble appeared for several days until the patients were discharged.

The few cases which showed active tonsillitis in conjunction with rheumatism were promptly relieved of the throat symptoms.

In conclusion Crandall states that Schafer's vaccine, or phylacogen, for rheumatism appears from his experience so far to be of definite value. It cures so promptly most acute and subacute cases that he thinks it will safeguard the heart from the unpleasant acute and chronic complications; it relieves many of the severe chronic rheumatic affections and may cure the less destructive chronic conditions.

# OBSERVATIONS ON THE EFFECT OF IPECAC, PHENOL, AND SALICYLIC ACID ON AMEBAE IN VITRO.

The New Orleans Medical and Surgical Journal for June, 1912, contains an article by Lyons on this topic. His summary of results and experiments is as follows:

1. The experiments with ipecac on amebæ *in vitro* fail, thus far, to explain its clinical value in the treatment of amebic dysentery.

In a few experiments ipecac apparently

possessed slight inhibitive power on the amebæ, but the results were not sufficiently marked to warrant any definite conclusion.

- 2. It is possible that the action of the ipecac is dependent upon some specific change which it undergoes after ingestion into the body. On the other hand, it is highly probable that the amebæ grown upon artificial media are not the *Entameba histolytica* and may therefore be more resistant to the action of the ipecac.
- 3. The experiments with phenol show that it has no effect upon amebæ except in comparatively strong solutions. Its action is chiefly upon the symbiotic bacteria. From a clinical point of view the action of phenol is unimportant.
- 4. The experiments with salicylic acid revealed a marked destructive action upon amebæ in dilutions up to 1:5000. Above this point some slight inhibitive effect on their growth was demonstrated in dilutions as high as 1:10,000. It is also strongly bactericidal.
- 5. This marked effect of salicylic acid on amebæ is an additional reason for the administration of ipecac in salol-coated pills in preference to other coatings (e.g., keratin) or methods, as it is well known that salol is broken up into its two constituents in the intestinal tract, yielding about 64 per cent of salicylic acid.
- 6. Lyons suggests also the use of salicylic acid as an irrigating fluid, in amebic dysentery, in watery solutions of 1-to-4000 to 1-to-1000 strength.

Since this paper was read the author's attention was directed to an article by Dr. E. B. Vedder in the Bulletin of the Manila Medical Society, March, 1911, entitled "A Preliminary Account of Some Experiments Undertaken to Test the Efficiency of the Ipecac Treatment of Dysentery." In this article Dr. Vedder concludes that ipecac is a powerful amebacide, and that this property is probably dependent upon its emetin content, which differs widely in various specimens. Unfortunately, in the experiments of Lyons, the ipecac was examined and found to contain only one-fifth of the total alkaloids required by the U.S.P. In

view of these facts, the conclusions expressed in regard to ipecac must be withheld until the experiments can be repeated with an assayed product of ipecac. [We have already published Vedder's results.—Ep.]

## THE ABORTIVE TREATMENT OF ACUTE GONORRHEA OF THE MALE URETHRA.

BODENHEIMER in the New Orleans Medical and Surgical Journal for June, 1912, reminds us that in November, 1909, E. G. Ballenger, of Atlanta, published an article in the Therapeutic Gazette on "A Method of Curing Quickly Beginning Gonorrhea by Sealing Argyrol in the Urethra." Previous to this, various attempts had been made toward the abortive treatment of this disease. Hume, of New Orleans, has described a treatment with solutions of varying strength of silver nitrate held in the urethra by closing the meatus with the fingers for one, two, and three minutes. While this treatment has no doubt proven efficacious in aborting gonorrhea, still a very disastrous result, balanitis, etc., with the concomitant suffering, led Bodenheimer to abandon this method very early. Argyrol in strong solutions, when freshly prepared (mark the words freshly prepared), seems to possess the gratifying properties of acting (contrary to laboratory experiment) as a gonococcide in acute cases without tissue destruction. Of course, it is not claimed that all cases of gonorrhea are cured by its use, but a sufficient number of successful results warrants its trial in all cases. Even if the cure is not effected by a few treatments, we have done no injury to the urethra, nor have we retarded the final results, but, on the contrary, the discharge is lessened and the patient is thereby the more encouraged.

The method of Ballenger is as follows: The glans penis and prepuce are well washed with soap and water. The patient then reclines upon an operating table or chair and a clean towel is placed around the penis to protect the clothing. A piece of cotton saturated with ten-per-cent cocaine solution is placed on the meatus for a few

minutes to prevent the pain following the application of collodion. About twenty drops of 5 to 8 per cent argyrol are injected into the urethra with a blunt-pointed syringe. The thumb and forefingers holding the end of the penis, the syringe is withdrawn and the meatus closed by pressing the lips together. The parts are then dried, and a small amount of collodion is applied over the meatus as its sides are pressed together. The patient is instructed not to remove the collodion until it is necessary to urinate. Two treatments are recommended daily for two or three days, and one treatment daily for one or more days, according to the condition.

Bodenheimer has departed somewhat from the original idea. He first examines the discharge under the microscope, and if no cells from the deeper layers of the mucous membrane are present, or, better still, if the discharge is less than forty-eight hours old, showing an absence of deep infiltration, he is assured of success. anterior urethra is irrigated with a large quantity of warm sterile water or a solution of bicarbonate of soda, the bladder being previously emptied. A half-drachm of 20per-cent solution of argyrol is injected into the urethra, the meatus is sealed with collodion and a small piece of cotton, or by means of small adhesive strips. The patient is instructed to retain the solution for two hours, or longer if possible. Four hours later a second treatment is made with solution of argyrol of the same strength. The next morning, in a majority of cases that are aborted, there is only a thin mucous discharge, which may or may not contain gonococci. For safety, a 10-per-cent solution is now injected. After the third treatment, if the gonococci can still be demonstrated in the secretion from the urethra, it is useless to continue the same treatment. If the gonococci cannot be demonstrated, we may feel assured that the object is accomplished, although a slight mucoid secretion may continue. It is best to leave that alone, as continued treatment may produce irritation, and if left alone the discharge will cease of its own accord. Sometimes, to satisfy the patient, a mild bicarbonate irrigation of the anterior urethra can do no harm.

Bodenheimer has treated thirty-four cases by this method. Two cases were given only one injection, with prompt results; the remainder were given two and three. He has experienced untoward effects in only two cases. The one had been previously treated by this method successfully about eight months previously. The second time that he presented himself for treatment he suffered from retention of urine, which necessitated catheterization, and which was followed by a posterior urethritis, requiring a number of weeks of treatment. The other case presented himself with a history of thirty-six hours' discharge; intracellular gonococci and cells of the deeper structure of the mucous membrane present. No gonococci demonstrated after two treatments; no secretion after the fourth day; developed orchitis on fifth day. Subsequent history developed the fact that the case was an exacerbation of an old chronic condition.

In a personal communication from Dr. Ballenger, he reports 325 successfully treated cases by his method, which, with Bodenheimer's own experiences and those of colleagues, demonstrated to his mind beyond any doubt that the method is at least worthy of a trial in all acute gonorrheas of the male urethra.

#### TREATMENT OF SUMMER GASTRO-ENTERIC DISEASE IN CHILDREN.

KERR in the Long Island Medical Journal for June, 1912, insists that everything should be made subservient to the conservation of strength.

Enforced rest (preferably in the open) should be instituted immediately. Rest of mind as well as of body is needed; therefore a single attendant is desirable.

Stomach washing is useless (vomiting empties the stomach and is dependent upon the toxemia) and bowel irrigations are unnecessary. Absolute abstinence from all food and fluids is indicated for many hours (12 to 36), and the first administration of fluid (sterile water) must be at long inter-

vals (two to six hours) and in small quantities (a few drops to a tablespoonful). With the subsidence of vomiting, thin cereal gruels may be used frequently (every fifteen minutes), in small (1 drachm) but increasing (tablespoonful) amounts. The return to milk must be cautious and very gradual. It is only safe to allow one or two feedings of small quantities at first, and then individual judgment must be displayed, but more cases are fed too early and too freely than not. Use skimmed milk at first. Proprietary foods are harmful on account of the usually large percentage of sugar. Albumen water (popular but deceiving) is of small value and may do much harm, adding a putrefactive element which leaves us uncertain as to its part in a foul-smelling stool.

Alcohol is disturbing to the stomach and vomiting is a contraindication to it, therefore meat extractives containing it are apt to be poorly tolerated; they are best withheld.

Soiled napkins demand immediate removal and adequate disinfection.

Stimulants (always) and sedatives (usually) are the only forms of medication that are indicated. These must be given hypodermically, except in rare instances (as not more than two emergency rectal injections). After thorough experimentation Kerr has found the most dependable stimulant to be tincture of strophanthus. This is given with brandy in the serious cases and alone in the less severe.

Morphine is the best sedative (acting indirectly as a cardiac stimulant also), being certain, safe, and prompt, and its action is enhanced by the addition of atropine (which lessens excessive loss of fluids).

For subnormal temperature, use the hot bath (105° to 110° F.) for a short period (three to five minutes) and repeat every thirty to sixty minutes, if the indications are present.

For hyperpyrexia, use the cool pack (85° F.) by wetting the sheet every thirty to sixty minutes as indications suggest and without disturbing the patient.

For cold extremities use hot bottles and bags (but not in the usual manner). The

writer's experience has taught that a few minutes' local use of mustard water (hot) prepares the patient for the comfort and protection that should come from hot bottles. Use the mustard water first; then apply the bottles or bags. Bags and bottles alone take hours to accomplish desired results; test it yourself, using both methods.

Promptly and thoroughly protect all excoriated surfaces; they are dangerous.

Rectal injection of hot coffee, brandy, or camphor is justified in extreme cases (if not repeated more than once).

Hot (105° to 110° F.) saline solution per rectum, given very slowly (if possible by Murphy drip), is often serviceable after excessive peristalsis has been controlled (to supply fluid, not as irrigation).

Hypodermoclysis is rarely indicated. The milder and the more common type of cases demand an entirely different treatment and will be considered in a future communication.

Relapses are rare in the choleraic cases; these choleraic forms result in early death or prompt recovery. However, ileocolitis as a sequel is most common in occurrence.

### SOAPS AND THEIR EFFECTS ON THE SKIN: AN ANALYTICAL RESEARCH.

GARDINER in the Edinburgh Medical Journal for June, 1912, contributes a paper on this topic. A summary of conclusions is as follows:

- 1. All soaps, from their chemical constitution, must be irritant to the normal skin.
- 2. The effect varies with the individual skin, and is more pronounced in senile and diseased skins.
- 3. Cottonseed oil and rancid fats are probably largely responsible for the irritant effects in cheaper soaps. They are much more commonly used now than in former years. Gardiner is of the opinion that the first mentioned is, uncombined, a skin irritant, but this is a matter for further inquiry.
- 4. The bactericidal power of soaps is nil, and even when combined with antiseptics they are of no value as germicides.
- 5. There may be some reason for the introduction of such substances as sulphur

and ichthyol into soaps because of their effects on the glands and blood-vessels of the skin, but clinically, antiseptics, and above all carbolic acid, increase irritation.

- 6. There is no scientific basis for the addition of extra fat to soaps, as when soap is mixed with water the alkali freed will at once unite with the superfluous fat.
- 7. Rosin and impurities have no significance from the present standpoint, but paraffin and benzene derivatives, when incorporated with soaps for cleansing purposes, increase the harmful effect on the skin.
- 8. The minimum of soap should be employed, and well washed off.

#### SENILITY AND ITS MANAGEMENT.

McCorkle in the Long Island Medical Journal for June, 1912, reminds us that many old people sleep far more than they think they do. On the other hand, many old people sleep far less than we think they do, and the want of sleep in the decadent is a constant menace to comfort, well-being, and life. A sleepless night propagates its unpleasant influence into and casts a gloom over the following day. Pure circulating air. without draft, is a wonderful tonic to the aged, but the bed should be warm. Cold sheets drive the blood out of the cutaneous area and in on the internal organs, especially the brain, stimulating it above the sleep point. It has been said that "wine is the milk of old age." A little hot toddy at bedtime is a wonderful hypnotic for the old. At first it stimulates the cerebral circulation, giving pleasant thoughts and a sense of well-being and comfort. Soon the tide changes, and then the warm blood from the internal organs is carried to the surface. giving a sense of warmth to the body. The circulation in the brain comes down to the sleep point, and sleep speedily supervenes. But this sleep is often of short duration and must be supplemented by other reme-Chloralamide, although not much dies. used in general practice, is of signal service in treatment of the old. It is soluble in whisky, and may be taken with the hot toddy at bedtime. By the time the alcohol has reached its limit of usefulness the

chloralamide will take up the good work, and in the majority of cases a good night's sleep is the result. Even though the patient be disturbed by a distended bladder he soon drops to sleep again.

The senile heart is the organ that calls for the most watchful care; having grown weary, it is often sorely in need of help. Dr. Richardson made the statement years ago that almost every heart after sixty, without any manifest disease, becomes at times irregular, and that not infrequently there may be established a regular irregularity of the heart. Many remedies are at hand, but when we get into trouble digitalis is the remedy par excellence. The question arises at once, what about the bloodpressure? Not all sclerosed arteries have high blood-pressure. In many cases there is hypotension, and here digitalis becomes invaluable, and even with high tension its untoward action can be counterbalanced by vasodilators, such as potassium iodide and erythrol tetranitrate. The senile heart as a rule does not need large doses of the remedy, nor oft-repeated doses. The textbook dose is too large and repeated too often. Digitalis is a chronic remedy and lasting in its effects. Its action, once established, will last two or three days after the administration of it has been discontinued. In senility a sustaining dose is indicated—a single dose once a day may be all that will be required. Any preparation of digitalis may serve the purpose, but the fat-free tincture is perhaps better borne by the stomach. Another preparation known as Nativelle's digitalin is a most reliable one. The dose is small; one granule once a day, or every second day, may be all-sufficient.

Some years ago a patient seventy-eight years old, hale and hearty in his green old age, spent a summer in the country. He had what his family called "a touch of the sun." He returned to the city in the fall a decrepit and broken-down old man. His heart was irregular and intermittent, with some precordial distress and a painful consciousness of the disturbed action of the organ. Various remedies were tried without avail. He was then put on Nativelle

granules, one every second day, this dose being sufficient to control all the distressing symptoms. From time to time the remedy was withheld, but always with a return of his suffering. In short, he took the remedy almost up to the time of his death at the age of eighty-two. He died not from cerebral apoplexy, as might have been feared, but from senile pneumonia.

Another excellent remedy for the very old is opium. After life's work is over, and when the affairs of to-day have lost their interest and memories of the past fill the dreamy waking hours, opium in small doses becomes a solace and a comfort to the aged and infirm. In small quantities it is an excellent heart tonic, as well as a gentle cerebral stimulant, and this is in keeping with the well-known therapeutic law that when a stimulating drug (of which opium is the type) is given in small doses, the period of stimulation is long and the stage of sedation is short, or nil; but if the dose is large the stage of stimulation is short and that of sedation is long, as in opium sleep. Dr. H. C. Wood years ago advocated the use of opium in advanced senility, and most wisely. The gum opium is the preferable form for its administration.

#### THE TREATMENT OF SYPHILITIC DIS-EASES OF THE NERVOUS SYSTEM BY SALVARSAN.

COLLINS and ARMOUR in the Journal of the American Medical Association of June 22, 1912, have this to say about the dose of salvarsan in syphilitic nervous diseases:

The average dose of salvarsan for an individual suffering from diseases of the central nervous system whose vitality is not conspicuously impaired is the contents of one ampoule (0.6 gramme). In patients whose blood-pressure is high (above 165 by the Stanton apparatus) and in whom there is very distinct evidence of cardiovascular degeneration, not more than one-half a dose should be given the first time. If the first administration is not followed within a fortnight by a chemical and microscopic evidence of cessation of activity of the syphilitic poison and the pathologic

process conditioned by it (negative Wassermann reaction, diminution of globulin, profound numerical reduction of lymphocytes in the cerebrospinal fluid), the dose should be repeated. The second dose should be the same as the first, unless some special reason exists for increasing or diminishing On the other hand, if the first dose is followed by indications of cessation of activity of the pathologic process, the second dose should be delayed for from six weeks The amount that shall to three months. then be administered will again be determined by the obtainable evidence of the effect of the former dose.

Physicians who have had much experience with salvarsan in the treatment of syphilis in what may be called its florid or active stages are apparently inclined to give the remedy in small doses and at frequent intervals-that is, from a week to two or three weeks. It has not been their experience that organic diseases of the nervous system or constitutional disorder, such as syphilitic neurasthenia, exudative tabes, meningitis, are best treated by frequently repeated small doses. On the contrary, they have had much experience that tends to show that these cases (that is, cases of patients who have a fair amount of vitality), other things being equal, are best treated by the administration of the remedy in full They give the second, third, and even fourth dose sooner now than they did a year ago, which may be construed to mean that they have become divorced from the idea that one dose of salvarsan is competent to overcome syphilis of the nervous system. They always tell patients before they receive their treatment that they are certain to have a second and possibly several. The dose of the remedy subsequent to the second injection (which with them is almost invariably a full one) depends on the laboratory findings in the blood and cerebrospinal fluid and the condition of the patient. One of the most extraordinary features of salvarsan therapy of organic nervous diseases is the enormous physical uplift which many of these patients get, and which is attended not only by a feeling of well-being and improvement on the part of the patient, but by

an increase of weight. Collins and Armour assert they have a score or more of such examples.

### PROBLEMS IN THE TREATMENT OF EXOPHTHALMIC GOITRE.

Musser in the American Journal of the Medical Sciences for June, 1912, reached these conclusions:

- 1. Endemic goitre should not be treated surgically until proper general treatment has been employed for a long period.
- 2. Surgical intervention should not be advised in cases of goitre associated with functional or organic disturbances of other secretory organs until the associated disorders are removed or relieved.
- 3. If relapse occurs in spite of general treatment, or in spite of treatment directed against the disorders of other organs, a goitre should then be treated surgically.
- 4. Medical treatment should be continued from six to twenty-four months. Favorable results should not be promised unless the patient is under the absolute control of a physician, so that treatment by rest, diet, bathing, physical therapy, and so forth may be carried out with precision and continuity.
- 5. Surgical intervention requires the same rigid and prolonged after-treatment to give permanent results.

Finally, Musser's conviction is that the surgeon does too much and the internist too little in the treatment of goitre.

### THE MANAGEMENT OF ASTHMA IN CHILDREN.

In the American Journal of the Medical Sciences for June, 1912, McClanahan has this to say as to the treatment of the paroxysm: "The utter capriciousness of asthma in its response to the action of drugs renders our course largely empirical, so that in many cases, in hope of finding one that will succeed at last, one drug after another is tried only to be discarded as useless." While it is to be hoped that the modern study of anaphylaxis will shed light on prevention and treatment of asthmatical attacks, for the present, at least, the physician

must be guided by clinical experience. While there is little danger to life in an acute attack, vet there is real suffering to the patient and anxiety to the parents, who naturally look to the physician for relief. In the experience of McClanahan. the fumes from the various asthma powders do not give relief to infants, but on the contrary often aggravate the symptoms by increasing the cough. The room should be warm. Air currents are to be avoided. The condition may be made worse by changing from a warm to a cool room. At the same time fresh air is necessary. Ventilation may be had from an adjoining room rather than from open windows in the room. Only necessary attendants should be allowed in the room. If the bowels are distended with gas they should be relieved promptly by a warm enema. If the paroxysm occurs soon after a hearty meal, then a prompt emetic will afford relief.

In the writer's opinion the following cases illustrate the value of different remedies and seem to prove that one drug will not relieve all cases. In two cases the writer has given adrenalin solution hypodermically. In both cases the relief was so prompt as to leave no doubt as to the value of the remedy. On the other hand, the writer has seen it utterly fail. The dose for infants is from 3 to 5 minims of the 1:1000 solution of adrenalin chloride.

The writer has attended one little patient a number of times, without any remedy giving relief, until morphine sulphate, 1/30 Then in subsequent grain, was tried. paroxysms this drug gave relief each time it was given. In another case chloral hydrate gave prompt relief. Other remedies had been given by him in previous attacks. In that case 3 grains were given and the dose repeated in an hour. After the second dose this child was enabled to lie down and breathe with comfort. In one of the most severe cases the writer has ever seen the inhalation of nascent oxygen gave quick relief. The child was cyanotic, with cold, clammy skin, and short, panting The attacks came on without breathing. any preceding evidence of bronchitis. The oxygen was administered during three separate paroxysms, and always with prompt relief. In this particular case the attacks ceased at the age of five years, and only recurred in a lighter form at the age of eighteen years. At the time this patient was under McClanahan's care a local druggist had an apparatus for the extemporaneous preparation of oxygen, so that it was possible to apply the remedy promptly.

In Osler's System the use of atropine hypodermically is recommended in doses sufficiently large to produce the physiological effect, but the writer has had personal experience with the remedy in only one case. The skin became flushed, but without marked relief.

There are cases in which after the severity of the paroxysm is relieved there remains a cough, with more or less wheezing and short breathing on exertion, that requires further attention. Here the use of heroin in a syrup of hypophosphites will often benefit by relieving the cough. In some cases in which the cough disturbs sleep, a single dose of antipyrin given at bedtime will allay the cough and induce quiet sleep. The writer distinctly recalls three cases in which this remedy acted well after there had been no benefit from other drugs.

It is difficult to estimate the value of inhalations, but where there is a dry, teasing cough this treatment should be employed. The value of the treatment resides in the fact that the inhalation of moisture promotes expectoration. The use of a croup kettle is necessary, as it is neither possible nor best to saturate the room with steam. A number of remedies may be used in the steam. The writer prefers a combination of creosote and oil of eucalyptus, one teaspoonful of the mixture in a pint of water. The use of this combination with an improvised croup tent, for one-half hour at a time, and repeated two or three times in twenty-four hours, will often soften the cough and induce expectoration. Inhalations of lime-water also will be of benefit.

Following the paroxysm of asthma, and until the cough is relieved, these children should receive very careful general care, including a restricted diet, attention to elimination, and careful regulation of the temperature and ventilation of the room and proper covering to the body on going outdoors.

#### ARSENIC AND DIGITALIS IN PULMO-NARY TUBERCULOSIS.

JACOBI in the Albany Medical Annals for July, 1912, discusses the facts for and against these drugs in tuberculosis, but speaks for rather than against them.

What Jacobi is quite sure of is that he has used arsenic in his treatment of the tuberculous these more than fifty years, and that he has tried to observe correctly and in many thousand cases. He is sure he has had success, else he would not have read his paper before the New York State Medical Society. During the last half-century he has also noticed reports of experiments which failed, others which were contradictory, or negative. That was so in antebacteric times; it is so now. What we experience in thousands of instances should not go for naught, though nobody is infallible—neither our teachers, nor our pupils. He does know that his nor ourselves. patients do well during the protracted administration of arsenic. If we are careful, we may be satisfied with not seeing a patient more often than every five or twenty-five weeks. So our treatment is surely not harmful.

What is the rôle of digitalis in the treatment of pulmonary tuberculosis? Here it exerts its influence, as in other conditions. It contracts the heart and the arteries, increases blood-pressure, nourishes the tissues, including the heart itself; it should be avoided in the acute inflammations only, or in those myocardial changes which bear no strain. That is why the doses should be adapted to the indications. If we refer back to what has been written for us. and again in a paper on "Prolonged Medication, with Special Reference to Digitalis," in the New York Medical Journal of 1902, we find this borne out. We know, however, all about the cumulative effects of digitalis: they are avoidable. We must be sure not to use preparations which are not immediately

soluble in water. If we do, the drug may not be absorbed at once, but in a larger bulk than is premeditated; and we must be sure to stop large doses, when given in acute dilatations of the heart and cyanosis and acute pulmonary edema, after we have accomplished our end. This peculiar indication of giving small doses a long time in succession Jacobi has discussed in his lectures for twenty-four years. That it was not generally adopted or appreciated is not any one's fault, nor his. In Germany it was suggested as late as 1899 (17th Congress for Internal Medicine), frowned down for several years, and finally appreciated. That such drugs as mercury, iodine, phosphorus, thyroid, thymus, suprarenal gland, indicate and require prolonged administration is established and accepted. Thus, digitalis also may be given in appropriate doses—to an adult, three or five grains daily—for months or even years in chronic heart diseases, with nothing but beneficent effect. That is easily understood by whosoever acknowledges that it is worth while to be patient and persistent when the disease is obdurate. Doses of digitalis may thus be found efficient in chronic anemia and chlorosis, when the circulation requires stimulation, for its tonic effect, in connection with arsenic or iron, or nux vomica. In pills such medication is easily and readily taken and digested.

In conclusion the writer says that it is a grave mistake to believe that a patient with tuberculosis should be directed to rely on air, rest, and food, to the exclusion of drugs.

Physical measures do not cure patients with restricted means, or those really poor, and anxious, and sorrowful.

Sanatoria which pride themselves on refusing medicinal aids are unsuccessful.

So-called symptomatic drugs, camphor, opiates, etc., are helpful and indispensable.

Arsenic should be given for months and years. Jacobi never treats a chronic pulmonary tuberculosis without it. He seldom gives it without a small dose of digitalis. He never gives it without a guaiacol salt; his routine has been the carbonate. Many prefer styracol, or thiocol.

# DISAPPEARANCE OF A SKIN CARCINOMA UNDER LOCAL APPLICATION OF ADRENALIN.

RITCHIE in the Lancet of June 29, 1912, reports the history of his case as follows:

The patient, aged sixty-three, by occupation a seaman, attended at the surgical out-patient department of the Edinburgh Royal Infirmary, on October 11, 1905. He stated that four years previously a small lump appeared on his right cheek and the skin over it then broke. Two years ago the growth was cut out at another hospital. The wound healed up directly, and the skin remained whole for six months. Then the condition broke out as before, and gradually progressed, there being no further treatment. There was found on the right cheek on a level with the lobe of the ear a tumor measuring about 3x2.5 cm. in area, the whole of it projecting above the skin surface about 1.2 cm. The entire surface of the tumor was ulcerated, of a dark-red color, and bleeding readily. No palpable enlargement of neighboring glands was detected.

At the patient's first appearance potassium iodide (15 grains thrice daily) was prescribed. A portion at the edge of the tumor was excised for microscopical diagnosis. Separate parts of this were diagnosed independently in the pathological department of the infirmary and by Ritchie as squamous-celled carcinoma. being showed a highly cellular epitheliomatous growth, continuous apparently with some remnants of surface epithelium; fairly marked cell-nest formation; not much connective tissue, but considerable areas of inflammatory infiltration.

In view of the history of the condition it was decided that, in the first instance, the effect of radium might be tried. The administration of the potassium iodide had been followed in the two weeks of its use by a slight contraction in the projecting part of the tumor. It was discontinued when the patient was sent to the electrical department of the infirmary, where he was treated by exposures to the x-rays for about a week. At the beginning of November

treatment was given instead with radium, an amount not more than a milligramme being applied in a glass tube directly to the surface of the tumor, for from a half to one hour daily six days a week. This was continued regularly for some time, the ulcerated tumor being also suitably dressed. No very marked change resulted, but there was no extension, so the treatment was persevered with. By the end of January, 1906, after three months of radiation and daily dressing, the surface projection of the tumor had shrunk considerably, approximating to the level of the skin, but there was little, if any, indication of lessening of the surface area involved in the growth.

It occurred to Ritchie at this time that it might be possible to assist the penetration of the rays by the use of adrenalin, applied with the object of rendering anemic for the time being the tissues acted on, following the principle used in the application of the Finsen light. A solution (1 in 1000) of the active principle of the suprarenal was employed, and the method he adopted was either to paint it freely over the tumor surface or to inject a few drops of it into the tumor a few minutes prior to the application of the radium. It was found that these injections were followed by a tendency to edematous swelling of the tissues, lasting perhaps some days, and they were given on only four occasions.

The use of the adrenalin was commenced on February 3, and continued regularly for three weeks. From the time of its commencement a distinct change for the better was noted, the ulcerated area steadily though slowly diminishing in size. It occurred to him then that possibly the adrenalin might have some beneficial action apart from assisting the penetration of the radium rays, and accordingly a wet dressing of lint soaked in the solution was applied each day. At the end of three weeks the patient accidentally injured the ulcer, pulling off a dressing which had dried on, and abrading a considerable area of epithelium at the margin of the ulcer, leaving a raw surface. The adrenalin applications were stopped and ointment dressings used. Healing of the raw surface took some time, and on March 8 it was noted in the record that the tumor tissue was then all slightly raised above the surrounding skin surface, and on the 12th that the ulcer was apparently healing above but slightly extending below. An injection of adrenalin was given on this date. On the 23d it was decided to stop the radium treatment for the time being. From the 28th onward wet dressings with adrenalin were renewed every two days, and the condition made comparatively rapid progress in healing, which it did uniformly all round the ulcer. On April 16 it was noted that the ulcer had completely healed, leaving a very smooth, hardly visible scar. The patient was ordered to report at an early date.

On June 26, 1906, he reported himself. The notes recorded a smooth cicatrix, perfectly sound and mobile. No glands palpable. A similar entry was made on December 15, 1906. He was seen again more recently, in the summer of 1909, and on January 29, 1912. At this date the cicatrix showed some shrinking and was hardly noticeable, and was quite sound. The patient was in excellent health and engaged in his employment as a seaman.

The course of events in this case seemed to give evidence of a beneficial action attributable to the local application of adrenalin, as it apparently initiated the healing of the ulcerated epithelioma all round its Its mode of action is obscure. margin. One takes into consideration, of course, its capacity for diminishing the vitality of the tumor cells as the result of the anemia induced locally, but it is to be noted that its influence in this way would last for only a small portion of the time that intervened between its applications. In the process of healing there was no production of a necrosis of the tumor mass, leaving a cavity to be filled up by granulation, but apparently a gradual replacement of the tumor at its periphery by healthy new tissue, accompanied pari passu by the growth of new epithelium on the surface extending inward.

The influence exerted by the radium is also obscure. It is to be noted that its use

extended over a period of 143 days, that of the adrenalin 40 days, of the two together 25 days; that when the adrenalin was stopped, the radium being continued, there was shown a tendency to relapse; and that the healing was comparatively most rapid when the adrenalin was again used, the radium being discontinued.

Before reporting on such a case it is desirable to allow some considerable period to elapse, and fully six years have now passed since the disappearance of the carcinoma without there being the least indication of recurrence. The case has some added interest in view of the more recent results obtained experimentally in the treatment of cancer in rodents with adrenalin, and also of the recommendations now made for the use of that drug as a means of improving the therapeutic properties of radium by rendering the superficial tissues ischemic at the site of the radiation.

### HEDONAL AS A GENERAL ANESTHETIC.

This synthetic product—methyl-propylcarbinol-urethane-more powerful than its congener urethane, was introduced some few years ago as a hypnotic. It may be prepared from methyl-propyl-carbinol, which is warmed and acted upon by urea nitrate. It forms fine, long, needle-shaped crystals which melt at 76° C., are slightly soluble in cold water, although more readily so in hot water. Its taste resembles that of menthol. In action it is similar to trional, and, according to de Moor, it is strongly diuretic when administered in solution. With alkalies hedonal when boiled decomposes, but boiling in neutral solution does not alter its composition.

Dreser, who has studied the pharmacology of this drug, regards it as a powerful diuretic, and attributes its action in this direction to its being split up in the organism into carbon dioxide, water, and urea. He asserts that it is ten times more powerful as a hypnotic than urethane; that it lowers blood-pressure, but does not interfere with respiration, but upon this last point his ex-

periments are in conflict with the clinical experience of Federoff and others.

Guided by the experiments of Lampsakow upon lower animals, Krawkow was led to employ hedonal as an antecedent to the administration of chloroform. He found that about 3 grammes (45 grains) lessened the quantity of chloroform required and diminished the severity of all after-effects. S. P. Federoff was led by experiments on animals, which revealed the fact that intravenous infusion of hedonal produced anesthesia without danger, to extend its use to In his first cases he employed 4 grammes of hedonal in mucilage as a rectal injection two hours previous to intravenous infusion of 0.75-per-cent hedonal in saline solution introduced immediately before the operation; 200 to 300 Cc. produced anesthesia, and subsequent infusion of 50 to 100 Cc.—that is, 6 to 10 grammes—sufficed for a single anesthesia. Subsequent experience has led Federoff to dispense with the rectal injection and to rely solely upon intermittent or continuous infusion of a 0.75-percent warmed and filtered solution of hedonal. He plunges a curved needle into the peripheral part of a vein. After 100 to 150 Cc. have entered drowsiness supervenes, and in a minute or two deep sleep occurs. If the flow is too rapid respiration stops, but in his experience is readily restarted by a few compressions of the chest. He has employed the drug in this way in 530 cases. The utmost amount which should pass into the vein in a minute is 100 Cc. The limits of quantities which are requisite for operation lie between 400 to 8000 Cc. It must be remembered that given by the mouth the dose is reputed to be from 15 to 45 grains.

A. T. Sidorenko has recorded similar experiences, and concurs in Federoff's statements that the after-effects are usually extremely slight. He points out, however, that excitement may occur during the stage of recovery for a long time after the operation, and that when in that state the tongue is liable to fall back and lead to suffocation. Jeremirsch, pursuing Federoff's method, failed when making the infusion into veins

of the leg in two cases out of sixty-five. The limits of quantities used by him were 325 to 1100 Cc.

This system has up to the present been used with equal success in various Continental clinics, and in England to some extent, notably by Mr. C. M. Page at St. Thomas's Hospital. After an experience of over 100 cases, Mr. Page, who employs a continuous infusion method, regards the plan as valuable in many cases. So soon as anesthesia is established, he only permits a very slow rate of flow, and graduates the dose to the age of the patient; his patients have included young children as well as adults. He has met with no deaths due to the hedonal, and after-effects have been trifling or wholly absent.

It is impossible to estimate the mortality. as so few cases in which the drug has been used to produce general anesthesia have been reported. Last month an inquest was held as to the death of a man, aged fortyeight, in the Golden Square Throat Hospital, London, where hedonal had been given as a general anesthetic; he appears to have died in the postoperative stage. The verdict, in accordance with the medical evidence, was that death was due to heart failure from blood poisoning, accelerated by the administration of the anesthetic and the operation. A death has also been reported from Hull; in this instance Mr. Page's technique was followed, and the death appears to have resulted from respiratory failure some few hours after the operation was completed and all apprehension of danger had passed. A third death, recently reported from the Hospital for Sick Children, Great Ormond Street, was that of a girl, aged eight, whose respiration failed as the stitches were being inserted. In this case the pathologist considered that status lymphaticus was a contributory cause of death.

The obvious objection to drugs such as hedonal is the long time their hypnotic effect persists—a peculiarity which is an advantage during the operation, but a danger during the period of recovery.—British Medical Journal, June 15, 1912.

### THE QUESTION OF REMOVAL OF THE TONSILS.

ELLETT in the Memphis Medical Monthly for July, 1912, says his conclusions on this tonsil question can be summed up in a few words. Removal of the tonsils, thoroughly done, will relieve the patient of attacks of recurrent tonsillitis and quinsy, and in such cases should certainly be performed. In the majority of cases the question of whether or not to operate is better determined by whether or not the patient has recurrent tonsillitis, or quinsy, than by inspection of the throat. It is well to remember that all sore throats are not tonsillitis by any means. Other beneficial effects of tonsillectomy are as yet not firmly established, and while testimony from those well qualified to speak is to the effect that certain joint affections and other disturbances which have been referred to seem to depend on tonsillar disease and are relieved by tonsillectomy, it takes the careful observation of a great many cases to establish such a point beyond question. That it is an unsettled question with many is probably due to lack of opportunities for observation, and if so we should be on the lookout to remedy this lack of opportunity. The question is very important, too important to be settled by argument and theorizing, but demanding the collective investigation of all pertinent facts.

### PULMONARY HEMORRHAGE AND ITS RELATION TO HIGH ALTITUDE.

MERA and BISKIND in the Cleveland Medical Journal for June, 1912, discuss this subject. They point out that the percentage of hemorrhages in pulmonary tuberculosis is variously given as from 20 to 80. It is most remarkable, though, to note how low the percentage is in sanatoria. Looking over the records of over a hundred cases in Sunmount Sanatorium, the percentage was only 4. The reason may be that there they have hardly any perceptible spring or fall, nor sudden changes in temperature, nor sandstorms, as they are hemmed in between the mountain ranges that protect them on all sides. But the

fact that the percentage comes down to 20, and even 10, at the southwestern sanatoria, while in the East the percentage is as high as from 40 to 60, makes one think.

We often hear physicians say that their cases do just as well at home, under intelligent management, and providing they fol-With this the authors low instructions. differ. That "providing they follow instructions" is the main stumbling-block. A person can never be under strict discipline at home for a year or more without breaking it. The physician can never eliminate all excitement, mental strain, worry caused by family and business affairs, while at home. They make mention of a case that had been in a fair way to recovery when the grand opera came to town; he, being a great music lover, insisted upon going, and the attending physician gave his permission. The patient attended the first two acts and was seized with a severe coughing spell. He had to be taken home, where he had a severe hemorrhage. Anything like that can never happen in a sanatorium.

Others say that so long as the patient is in a sanatorium, under good care and discipline, the altitude and the climate have very little to do with his improvement. Here again they must differ. We want fresh air, and not very cold air, for our patients. We want the temperature more or less steady. We don't want our patients to be exposed to 20 degrees below zero, nor do we want them to be in an atmosphere of 120 above. We cannot have ideal weather with low humidity at sea level. Furthermore, according to the recent work of Webb, continuous residence at high altitude invariably increases the number of mononuclear lymphocytes, which, according to later investigators, are combating the Koch's bacilli. It is an undisputed fact that there is an increase in the erythrocytes from five million to eight million in high altitude. If one takes all the above facts into consideration, one will not hesitate to send his incipient cases to a sanatorium in a good climate and under the care of an able man. In the East the percentage of recoveries in incipient cases is not as high as the sanatoria out West can show in their advanced cases. Especially in the hemorrhages of the initial stage (which, according to Babcock and other investigators, are far more frequent than in the advanced cases) the patient should be sent to a good sanatorium out West, where, as stated above, hemorrhages are a good deal more rare.

### THE EFFECTS OF SALVARSAN ON THE

REESE, in the New York Medical Journal of June 29, 1912, concludes:

- 1. Salvarsan is a powerful symptomatic remedy for the treatment of luetic eye lesions.
- 2. It certainly merits attention, especially in combination with mercury and iodine.
- 3. Its action is more rapid than that of mercury, but it should not replace that valuable remedy, except in selected cases.
- 4. It should be given intravenously for quick action and for the comfort of the patient.
- 5. It should not be given in simple spinal, non-inflammatory atrophy of the optic nerve.

### ACTION OF IMMUNE SERA ON PNEUMOCOCCUS INFECTION.

WADSWORTH, in the Journal of Experimental Medicine of July 1, 1912, discusses this subject and gives the following summary and conclusions:

From the results of his study of the action of immune sera on pneumococcus infection it is evident that immune sera vary greatly in their curative value. Immune sera possess protective action, but protective action is not necessarily indicative of curative action.

Treatment with the serum of normal rabbits may prolong the course of pneumococcus infection in the rabbit. This action, however, is slight and not always manifest. Sera from animals immunized with dead pneumococcus cells which had been washed free from their products failed to exert materially greater curative action

than normal sera. Sera from animals immunized with culture filtrates free from pneumococcus cells possessed, in some instances, a slight curative value, but often this curative action was not apparent.

In animals actively immunized, however, the presence of an immunity to culture filtrates was readily demonstrated. In the immunity produced by injections of dead culture material the strength was not sufficiently exalted for the sera to possess a practical curative value.

It was only after immunization with virulent living cultures that the blood serum acquired marked curative action. After pneumococcus infection in the rabbit had become established, treatment with this serum induced crisis and cured the animals.

From the results of the study of the mechanism of recovery it is evident that, despite the fact that virulent pneumococci are singularly insusceptible to the action of immune sera in the test-tube, pneumococcus infection nevertheless conforms to the general law of infection.

Diphtheria and tetanus organisms give rise to powerful toxins, but the parasitism of these organisms is slight and their development is localized. Diseases produced by these organisms are toxemias, and neutralization of their toxins by antitoxin puts an end to the disease.

The pneumococcus gives rise to toxic substances which are less active or are active only in the body tissues, but the parasitism of this organism is marked and its development is rarely localized. Nevertheless, the manifestations of the disease arise from the action of the bacterial poisons on the tissues. The neutralization of the pneumococcus poisons by immune sera puts an end to the symptoms of the disease, but the pneumococci survive as harmless parasites until destroyed by lysis or phagocytosis.

The neutralization of the pneumococcus poison may take place suddenly and completely as in crisis; or, it may be incomplete with exacerbations of infection, as in lysis. Crisis, as it occurs in the lobar pneu-

monia of man and in the bacteriemia of the rabbit, is simply one phase of recovery, and recovery does not differ fundamentally, whether it is sudden and complete as in crisis, or incomplete and prolonged as in lysis, or whether the pneumococci are destroyed by lysis extracellularly as in the rabbit, or intracellularly as in the phagocytosis of the dog and man.

Since the recovery of animals from pneumococcus infection differs in no essential from that of man, since the unaided protective mechanism of man as compared with that of susceptible animals is exceptionally efficient, and since it is possible by treatment with sera from animals highly immunized with living cultures of virulent pneumococci to cure pneumococcus infection in the most susceptible animals, it is difficult to conceive of the infection in man failing to yield similarly to the administration of such sera.

#### ALOPECIA AREATA THERAPY.

BECHET, in the New York Medical Journal of June 29, 1912, says the question of treatment is a debatable one. Those who believe the cause to be entirely parasitic do not care for other than local treatment. while others, who believe it to be a neurosis, depend mostly on constitutional and hygienic measures for results. Believing, as he does, that the contagion variety is a new disease of as yet unknown bacteriology, which for the lack of something better has been classed under the heading of alopecia areata, Ferguson thinks a judicious use of both local and constitutional methods produces the best results, as we cannot as yet definitely differentiate the two varieties of the disease. Locally the use of resorcin in 2.5- to 6-per-cent solutions, in combination with irritants such as cantharides and capsicum, is of value. He varies the strength of the last two ingredients in accordance with the effects produced, the indication being to cause considerable stimulation of the scalp, as evidenced by slight redness, sensation of warmth after application of

the lotion, etc. The lotion is applied daily and well rubbed in with a circular motion. He uses the resorcin for its known specific action against the bacilli asserted to cause seborrhea, and which are so frequently found in cases of alopecia areata. He also hoped that it might be destructive to the microbacillus of Sabouraud, which might be a possible etiological factor and which is so nearly allied to the seborrheic Another local application of bacillus. great value is 95-per-cent phenol. manner of using it, according to Dr. Bulkley, the originator of the method, is as follows:

A small swab is made by twisting some cotton at the end of a toothpick. This is then dipped in pure carbolic acid and vigorously rubbed over the bald area, the space treated not to exceed two square inches. It is best to carry the application slightly beyond the bald area, and into the apparently healthy hairs. In a large area the surface is treated in successive portions, at intervals of some days. A scab is formed over the painted area, which scales off in about a week or ten days. The same spot should not be again painted before two weeks have elapsed. He has never seen a slough follow its use, nor has he noticed any other untoward effect. Unfortunately the application is not painless, the amount of pain varying with individual susceptibility. He has never known a patient to refuse subsequent applications. There is no doubt of its capacity in promoting hair growth. He has been applying it for the past three months, alone and in combination with stimulating lotions, in about fifteen selected dispensary cases. Each case had two or more bald areas of varying sizes. As a control one or more spots were always left untreated. In the majority of the cases the hair growth was markedly increased over the treated areas. In one case, in a treated spot about 3.5 inches in diameter, the hair is 1.5 inches long. An almost adjoining untreated bald area of the same size has hardly an appreciable fuzz.

He has had no personal experience with the high-frequency current in this condition, only one case of total alopecia areata being now under treatment by this method. It has been extolled by some and condemned as useless by others.

The eyes should be examined in all cases of extensive alopecia areata. Of six patients who consented to see an ophthalmologist, and were examined through the kindness of Dr. David Webster and his assistants at the Manhattan Eye and Ear Hospital, five were found to have various errors of refraction, and in these, some weeks after the wearing of the corrective glasses, the hair over the untreated areas began to grow in a surprising manner. He knows at present of a male nurse who, with an existing error of refraction, neglected the wearing of his glasses. He is now suffering from eye strain and has an area of baldness about one inch in diameter over the right temple. He has lately, at Ferguson's suggestion, faithfully used his glasses, with the result that the eye strain has disappeared and the patch is rapidly being filled in with a large number of white hairs. and this with absolutely no other treatment whatsoever, either local or constitutional. These cases have proved to Ferguson that where errors of refraction or ocular insufficiency coexist with an alopecia areata, the correction of the ocular defect with the subsequent relief of the eye strain undoubtedly is a contributing factor in the cure of the disease.

Internally, everything should be done to improve the general health. Arsenic, quinine, iron, phosphoric acid, strychnine, hypophosphites, phosphates, alone or in various combinations, may be used to advantage. He is particularly fond of iron and quinine citrate, given in increasing doses and pushed to the point of tolerance. The bowels should be kept open, and the patient should lead as regular a life as possible, avoiding the late retiring so prevalent in our day. A certain amount of outdoor life is indispensable, and deep breathing when outdoors should be encouraged.

It must be kept in mind that there is no one specific remedy for alopecia areata, and that the prognosis, with the exception of total alopecia areata, is rather favorable, especially when confined to a few spots and in younger persons. Under these circumstances we should avoid the mistake of considering any measure to be infallible, simply because we have seen a few cases end in recovery, supposedly on account of its use. In conclusion, he reiterates that the best results occur from a combination of local and constitutional measures effected after a very minute inquiry into the physical and mental status of the individual.

#### TUBERCULOUS LARYNGITIS.

In the Journal of the Michigan State Medical Society for July, 1912, McFall says the treatment of tuberculous laryngitis should always be that which is given any pulmonary tuberculosis case—fresh air, good food, meeting symptoms as they arise.

For a local application McFall has found formalin in from 3 to 5 per cent fresh solution to be above everything else. The larynx may first be cleaned with some alkaline solution, and then a cotton swab saturated with the formalin is rubbed over the surface. The burning sensation which follows is not painful except in greatly advanced cases. This may be helped by cocaine being first applied and then the formalin solution.

The throat feels clearer and in many cases the cough is eased when formalin is used, and he has seldom found patients objecting to it. He has seen early cases absolutely clear of any signs of laryngeal trouble within one week, but the general run of cases usually is over a period of weeks and sometimes months. This is not surprising because we must remember the diseased condition of the lung.

The action of formalin on the area involved causes a fibrous encapsulation of the tubercle, walling it off or destroying it by a slow process of fibrous transformation. As long as these areas remain in a quiet

condition no trouble need be feared. If, however, through some medium this protecting wall is broken down, the old foci will invade new areas, and recurrences are, as a rule, more severe and harder to conquer than primary.

Where there is an irritating cough, due to the lung condition constantly rasping the larynx, good results may be obtained from intratracheal injections of guaiacol, menthol, camphor, and eucalyptus with a base of olive oil. From 2 to 5 Cc. may be used.

In concluding, he wishes to emphasize that laryngeal cases must have special treatment, for no matter how well the lung condition is doing the patient cannot recover when the larynx will not permit the swallowing of food. On the other hand, he has seen cases in which the lung condition rapidly advanced, and yet under treatment the laryngeal involvement was held in control. It is not an unusual thing to find a temperature drop of a degree or more in a few days' time, when the larynx has undergone proper treatment. One thing which should always be done is to require of the patient a complete rest of voice. A diseased larynx straining to form sounds will resist treatment.

### THE DIETETIC AND MECHANICAL TREATMENT OF CONSTIPATION.

The Medical Times for July, 1912, contains an article by HOLLAND on this topic. As he well says, an ailment that has existed in most cases for years cannot be cured in a few weeks. In fact, there are few patients so thoroughly cured that they can return to the mode of living which in the first place caused the trouble.

Among the causes of constipation should be mentioned the effect of the habitual taking of laxative medicines. This is such an important matter that Holland forcefully emphasizes the seriousness of the practice. Every time in chronic constipation a laxative is taken without professional advice, the patient is weakening his intestinal function. The muscles are degenerated because their work is done for them, and the nerves that have to do with regulating the peristaltic motion, becoming used to the powerful stimulating drugs, refuse to respond to the normal stimulating effect of the food, and as they become accustomed to one powerful drug after another, finally reach the paralyzed condition we find in complete constipation. In starting with the treatment here outlined, the patient should make up his mind to stop all such dosing. He must understand that every dose of laxative medicine that he takes is putting his recovery back and defeating all his efforts at dieting and exercise. The bulky diet is given to reëducate the intestines as well as to make it easier for them to act, and the loose, watery evacuations, the result of cathartics, are certainly not the kind to accomplish this result if they were not otherwise undesirable. The excessive use of alcohol is to be condemned, especially the drinking even moderately of the red wines and brandy. While the smoking of a good cigar after breakfast is laxative to many who enjoy the weed, excessive use of tobacco is injurious in constipation because of its depressing effect on the nerves of the body generally and to some extent on those of the intestines.

The foods permitted in constipation are those printed in italics, either because they are rich in waste material or are chemically laxative.

Soups.—Plain meat broths, thick, well-cooked vegetable soups, clam or oyster soup.

Fish.—Any fresh fish, raw oysters or clams.

Meats.—Most fresh, tender meats, bacon, boiled ham, thoroughly cooked tripe, poultry and game.

Farinaceous.—Bran bread, gems or biscuits, whole wheat bread, Boston brown bread, corn bread, rye bread, Graham and oatmeal crackers, oatmeal, Pettijohn, mush. (All cereals to be taken with cream or milk, butter, and a little sugar.)

Vegetables.—Spinach, cabbage, Brussels sprouts, sauerkraut, beet tops and all greens, tomatoes raw or cooked, green corn, string or butter beans, peas, asparagus, cucumber,

celery, raw or cooked, oyster plant, parsnips, beets, carrots, turnips, squash, artichoke, cauliflower, lettuce, watercress, coleslaw, olives, baked potatoes.

Fruits.—Baked or raw apples, all kinds of stewed fruit, oranges and orange juice, peaches, apricots, grapes and grape juice, cherries, plums, prunes, cantaloupe, figs, dates, raisins, gooseberries, huckleberries, all preserved fruits, marmalades and honey, rhubarb.

Salads.—All plain salads with much oil in the dressing, the various combination salads in which there are vegetables, or fruits in large proportion.

Desserts.—Fruit pudding, fig pudding, apple charlotte, cut-up oranges with shredded cocoanut and a little sugar, home-made cookies, fruit gelatins with cream, bread pudding made with raisins and currants.

Beverages.—A great deal of plain cold water between meals, lemonade, orangeade made from the fresh fruit, raspberry juice in water, unfermented grape juice, new sweet cider, buttermilk, kumiss and matzoon, dekafa.

Of all these articles bran bread is perhaps the most valuable for our purpose in that it supplies not only a great deal of bulk, but is also very stimulating to the peristaltic action of the intestines. Some of it should be eaten with at least two meals each day. It can be made at home from the ordinary bran bought at the feed stores. The following recipe will be found a satisfactory one: Two cups of bran, one-third of a cup of ordinary flour, one egg, two tablespoonfuls of bicarbonate of soda (baking soda), salt.

The foods forbidden in constipation are salted, potted, preserved, or smoked meats, fish or pork (excepting ham and bacon, fresh pork, duck, dark meats of fowls, liver, brains, sweetbreads, an excess of eggs or milk, sugar, candies, pastry, nuts, cheese, new white bread or biscuits, griddle cakes, toast, crackers, baked beans, rice, tapioca, macaroni, spaghetti, sago, rich stews, blackberries, gravies, creamed soups, rich madedishes, most chafing-dish products, pepper, spices, curries, mustard, soda-water foun-

tain drinks, tea, cocoa, malted milk, ginger ale, spirits generally, especially brandy and the red wines, heavy beers and ales, cordials.

A specimen schedule for twenty-four hours follows, to be modified according to the requirements, taste, or finances of the individual, but to be followed persistently as to time, regularity, and the principle of the bulky diet.

Upon arising, a glass or two of cold water, followed by five minutes' exercise; this to be followed either by a cold bath or the slapping of the abdomen with a towel wet with cold water. Dress.

Breakfast: A baked apple with cream, a large saucer of oatmeal with cream, a little butter and sugar, a soft-boiled, poached, or scrambled egg with or without bacon, several pieces of bran bread and butter, a cup of coffee with cream and a little sugar, marmalade or honey; for those who smoke, a mild cigar.

Fifteen minutes after breakfast, visit the toilet whether the desire to do so is felt or not.

One hour after breakfast, drink a glass of cold water.

Lunch (for a business man): Cold chicken or ham, any kind of a salad (excepting potato), rye or brown bread and butter, a baked apple with cream, a glass of buttermilk or sweet cider. A cheaper one: A rye-bread ham sandwich, a baked or raw apple, a glass of buttermilk. For those at home: Cold meats, warmed-over vegetables, jam or preserves, with bran, white wheat, Graham or rye bread and butter, a glass of buttermilk or sweet cider.

One hour after lunch, drink a glass of cold water.

At three or four o'clock, take five minutes' exercise.

Dinner: Some clear soup or thick vegetable soup, a roast, steak, or chops, two or three kinds of vegetables, a salad with plenty of oil in the dressing, fruit pudding or oranges cut up, plain cookies, bread and butter as for lunch.

One hour after dinner, a glass of cold water.

At bedtime, three minutes' exercise, and if the visit to the toilet in the morning was not satisfactory, go there again at this time.

#### PETROLATUM TO PREVENT OR RE-LIEVE POSTANESTHETIC VOMITING.

FERGUSON, in the New York Medical Journal of June 29, 1912, suggests a line of experiment which possibly may be of value if ether in the stomach does play any important part in postanesthetic vomiting. It is the administering of liquid petrolatum. This drug is inert as a therapeutic agent, and is an excellent protective to mucous membranes. His experiments are not vet numerous enough to warrant drawing conclusions from them at this time, but his idea is that this bland, unirritating, foreign body, which tends to produce easy stools, if given in sufficient quantities, will slowly but surely pass through the alimentary canal, taking with it any ether and holding it in suspension until it is evacuated at the anus. He does not see how olive oil can be of much service in postanesthetic nausea, but if there is any truth in the theory of irritant ether he thinks he can see how use might be made of the United States Pharmacopœia petrolatum liquidum.

#### SACROILIAC DISPLACEMENT.

Young, in the American Journal of the Medical Sciences for July, 1912, has this to say of the treatment of sacroiliac displacement:

The treatment of sacroiliac affection includes (1) reduction; (2) the employment of apparatus; and (3) the after-treatment.

1. Reduction may occur spontaneously, the contiguous bony surfaces assuming their normal relations, although recurrences are likely to take place from time to time. When the reduction cannot be effected in the above manner the result can be best accomplished by placing the patient upon the face and producing forced extension, with traction of the limb. Or the patient

may be placed between two chairs, situated at an interval of about a foot and a half, the surgeon making downward pressure over the site of the articulation.

2. The employment of apparatus. The simplest form of apparatus is a broad belt made up of a surcingle with two buckles. Such a belt is frequently worn by workmen from choice as a preventive measure against future displacements. A useful device that has won much favor is the spider-like brace of Osgood. It consists of a heart-shaped pad, two uprights and four lateral steel bands, which are so incorporated that the corset thus formed exerts pressure upon the sacrum.

A most efficient apparatus is that devised by Young, and consists of a combination of an abdominal supporter of special construction and a well-cushioned, triangular pad, so as to exert required pressure upon the sacrum. Pressure on the upper or lower portion of the sacrum is regulated by means of two hard-tempered semicircular springs, to which webbing straps firmly attached are buckled in front. The pressure may be centered upon the upper region of the sacrum by drawing the upper straps tight while the lower ones are allowed to remain moderately loose, and vice versa; pressure may be made upon the lower region of the sacrum by drawing the lower straps tight. When required the apparatus may be retained in position by perineal straps, but when it is well fitted these are not necessary.

The principle sought for in any or all such appliances is the exertion of pressure upon the sacrum, either at its upper or lower part, according to the indications in the individual case.

Where deformity has existed for a long time it may become necessary to apply traction while the patient is in bed for a varying period before employing these appliances, while in some cases it is essential to fix the trunk and lower extremity until the subsidence of the active inflammatory symptoms.

3. The after-treatment, which is often neglected, consists in developing the af-

fected region by means of exercises, massage, vibration, and the application of the electric current to all the ligaments and fibrous structures around the articulation. so as to prevent future displacements. These séances should be prolonged and should be administered over long periods of time, in order to obtain the best possible effects from this line of treatment. Should any disease of the female genital organs be associated with displacements of the sacrum, it is unnecessary to remark that the former class of affections should at once engage the attention of the gynecologist. In certain cases in which non-operative measures have failed to give encouraging results, Young contemplates some radical surgical operations, as plating the pubic bones and wiring the sacroiliac articulation.

#### PRE-ECLAMPTIC TOXEMIA.

WELZ in the Journal of the Michigan State Medical Society for July, 1912, says the treatment of preëclamptic toxemia is essentially one of prophylaxis. The physician must keep careful record of bloodpressure and urine analysis, and should question his patient for subjective symptoms, which should never be disregarded in pregnancy. Urine analysis to be of service should be made at least every two weeks. When there is an abnormal urine greater frequency is necessary, depending on the severity of the toxemia. The general practitioner can keep a fairly accurate record by regularly taking the blood-pressure and getting the percentage of albumin by means of the Esbach albuminometer. The percentage of urea excreted, as well as the absolute quantity, is easily obtained by the use of a Doremus ureometer. While it is impractical for the general practitioner to obtain the undetermined nitrogen, he can estimate the urea excretion and so be warned as to the disturbed metabolism, as the defective desamidization is usually accompanied by decreased urea output. As soon as the condition is recognized the patient should be helped to return to normal

metabolism. Elimination of defectively metabolized proteids should be encouraged in order to rid the system of the substances which are toxic to it. Depending on the severity of the condition, relief may usually be obtained by regulation of diet, stimulation of elimination, and correction of defective hygiene.

As the disorder is one of defective desamidization, the quantity of albumin ingested should be reduced as much as possible so as to permit the proteid metabolism to return to the normal. Milk is the best diet for this purpose. When the condition of the patient improves, as indicated by bloodpressure and changes in urinary nitrogen excreted, a greater range of diet may be allowed, always restricting the quantity and quality of nitrogen-containing food. Lettuce, asparagus, spinach, bread and butter are the foods which may be added first. With great improvement more may be added, providing there is no increase of toxemia resulting from their use. Elimination may be aided by copious draughts of water. Catharsis is obtained by use of enemata or salts. Severe cases may be helped by proctoclysis with a warm decinormal saline solution. Hot packs and hot baths are of great service in severe toxemia; milder cases are aided by warm baths given once or twice daily. Rest is necessary, as well as intestinal hygiene, relief of acidosis and indicanuria. Thyroid extract may be of service if the toxemia is not too far advanced.

If, in spite of these efforts, the condition becomes worse, it may be necessary to empty the uterus. In fulminating cases of toxemia of late pregnancy, this is probably the only procedure which promises any relief, and the sooner it is done the better are the chances for recovery. Ordinary cases can be controlled without surgical interference.

The excessively high blood-pressure which precedes the onset of eclamptic seizures should be relieved as much as possible. As the condition is only a temporary one accompanying severe toxemia, and as it

disappears automatically postpartum, it is rational to believe that a temporary relief during the height of the toxemia might prevent the convulsive seizures. Hygiene, diet and elimination are the best routine aids for the relief of excessively high bloodpressure. Thyroid extract judiciously administered, nitrites, veronal, and veratrum viride may be given under proper supervision to aid the other methods.

### COMPLICATIONS, SEQUELAE, AND TREATMENT OF TRACHOMA.

NETTLE, in the Medical Times for July, 1912, asserts that the treatment of pannus consists in removing the cause—that is, the diseased membrane—either by an operation or by its repeated scarification. Nettle uses atropine for rest and protection of the deeper parts of the eye, and applications of hot water. If there is much discharge he employs a silver salt followed by saline. Other remedies are copper sulphate, tannic acid, alum, and bichloride of mercury. The patient is instructed to wear smoked glasses and to keep away from bright light. wind, smoke, and dust. If the pannus is of long standing and the cornea has lost its translucency, we try to produce an inflammation by the instillation of jequirity infusion.

The radical operation for the very bad cases is the so-called Heisrath Kunth operation. This operation has for its object the total removal of the thickened, distorted tarsal cartilage and the overlying mucous membrane, so that the lid is left soft and plastic, and exerts no pressure on the underlying eye. In severe cases it is necessary to remove the cartilage of both the upper and lower lids. The procedure is as follows:

The upper lid is everted upon itself so as to expose the fornix. An incision is made parallel to the upper border of the tarsal cartilage. A second semicircular incision is made as close to the edge of the lid as possible and with its ends joining the ends of the first incision. These incisions

extend down to but not through the underlying muscle. The tarsal cartilage and its overlying mucous membrane are then dissected off completely. The exposed area is covered by dissecting up the remaining mucous membrane, drawing it down and uniting it by sutures to cover the whole of the denuded surface. In order to hold the sutures they are drawn in mattress fashion through the lid and anchored by small masses of gauze, so that the sutures do not cut through the lid.

The same technique is employed for the lower lid, but in this case no sutures are inserted.

Ulcers of the cornea are treated the same as pannus, but we do not apply copper sulphate. For trichiasis the treatment consists in epilation of the offending eyelashes or plastic surgical operations of various kinds. For entropion and ectropion a variety of plastic methods are available. Very little can be effected for symblepharon by operation.

Xerosis is incurable. The only thing we can do is to use palliative measures, such as the various emollient and soothing oils, glycerin, ol. ricini, mucilage, etc.

### THE SALVARSAN TREATMENT OF PERNICIOUS ANEMIA.

BRAMWELL, in the British Medical Journal of June 22, 1912, reminds us of the fact that in March, 1911, he published in this journal two cases of pernicious anemia in which great improvement resulted from the administration of salvarsan. In this paper he proposes to record the future progress of these cases—they have remained well without any further treatment -and the results in five (all the) other cases treated in the same way. Since he commenced to treat cases of pernicious anemia with arsenic in the year 1875 he has had a large experience with the disease; the impression which has been made upon his mind by the results of the salvarsan treatment in the seven cases which he now records is, on the whole, very favorable. If his observations are confirmed by further experience, and by other observers, he is disposed to think that salvarsan will probably be found to be a more efficient remedy than arsenic given by the mouth, and indeed more efficient than any form of treatment which has as yet been employed in this very grave and intractable disease.

#### HEXAMETHYLENAMINE IN THE AF-FECTIONS OF THE UPPER RESPIRATORY TRACT.

EISENBERG, in the Journal of the American Medical Association of June 29, 1912, has this to say in regard to hexamethylenamine in acute rhinitis:

Daily routine inspection of the schoolchildren is responsible for the fact that practically every case of rhinitis reported was put under treatment within less than twenty-four hours after the onset-i.e., before a free secretion had been established. At that time the only complaints were slight headache and "stuffiness" in the nose; every patient observed was kept indoors for a day or two, was given 1 grain calomel and soda (in 1/4-grain doses, every fifteen minutes), and six hours later was given two teaspoonfuls of magnesium sulphate. Hexamethylenamine was administered as follows: Children ten years old received 0.3 gramme (4 grains) dissolved in half a glass of water, three times a day during the first day, and twice a day during the following day or two. Two boys of fifteen and over received 0.4 gramme (6 grains) dissolved in a full glass of water, while two adults were given 0.7 gramme (10 grains) in the same way. Only two patients required further administration of hexamethylenamine, which was given in half of the original dose, twice a day for two more days. No other treatment of any kind was given, nor was the diet restricted in any way, except that milk was withdrawn during the day on which calomel was given. The results were as follows: Of the eight cases which were seen before the secretion had been established,

six developed a scanty discharge on the following day, which disappeared completely on the third day; of the other four cases (which were first seen after the secretion had just been established), two developed a moderately free and two a profuse discharge on the following day, which disappeared on the fourth day; in almost all cases the sensation of "stuffiness" and headache were relieved on the day following the initial administration of hexamethylenamine, and none of the patients developed any complications, such as sinusitis, laryngitis, or—by far the commonest—bronchitis.

Concerning hexamethylenamine in acute bronchitis, Eisenberg says that in twentytwo cases of acute bronchitis, seventeen patients, when first seen, complained of a slight but irritating cough, which caused a "raw" feeling under the sternum, some malaise, and other general symptoms of the disease; the other five patients were first seen when the cough was somewhat "loose." the expectoration being serous or seromucous, but not purulent. In fourteen cases there were heard on auscultation shifting, sibilant and sonorous râles, while in the other eight both the sibilant and crepitant and subcrepitant râles were present; in six cases rhoncal fremitus was present on palpation: temperature ranged between 99.5° and 102° F. In four cases acute laryngitis was present at the time of the first visit.

The treatment consisted of keeping the patients in bed as long as temperature stayed above the normal, excluding meats and pastry from the diet, securing as perfect ventilation as possible, giving calomel and soda, and magnesium sulphate, as described above, and administering hexamethylenamine as follows: Full doses, 0.7 gramme (10 grains) for the adults and corresponding doses for children, were given three times a day for three days, twice a day until the cough subsided, then half doses twice a day for three more days. No other treatment was given, except in those cases in which acute laryngitis was present;

here inhalations of medicated steam were given every four hours (a teaspoonful of compound tincture of benzoin to a pint of water). The results were very good indeed; every patient was well within from four to five days: free secretion was promptly established with great relief to cough; temperature became normal on the second or third day; and all other coexistent symptoms subsided within three days. The only difference in the effect of hexamethylenamine given in acute bronchitis and given in acute rhinitis was that the bronchial secretion was much more abundant in the former than the nasal in the latter; why this should be so, or whether this was purely incidental, is not known.

All of the eight cases of influenza were of the respiratory type, and were characterized by great prostration. Temperature ranged from 100.7° to 105.2° F. at the time of the first visit. The routine hygienic and dietetic treatment was instituted, while the medicinal treatment consisted of a mild purge, moderate doses of acetphenetidin for pain, and hexamethylenamine administered in full doses three times a day, until temperature stayed below 100° F. and general symptoms were much improved; then half doses three times a day until temperature became and staved normal: and then onethird of the original dose was given three times a day for a week. All patients were well within from five to seven days, with no complications following; the symptoms referable to the respiratory system were manifestly improved within from three to four days. No untoward symptoms which might be ascribed to the use of hexamethylenamine were observed.

As to hexamethylenamine in chronic frontal sinusitis, he reports a very interesting case. An adult Italian came to him for the first time on February 9, 1912, complaining of a "catarrh in the head and nose;" he said that ordinarily he was not suffering much, but every time he had an attack of acute rhinitis he would have a very severe pain at the root of the nose and around the right eye—an obvious exacerba-

tion of the chronic frontal sinusitis. He prescribed for him hexamethylenamine, 0.3 gramme three times a day, and told him to take it for a month. He came back to his office six weeks later, and though he did not feel any better, he was delighted with the fact that while a week ago he had suffered from an attack of acute rhinitis, he was for the first time in the last six years absolutely free of any pain or any other symptom referable to the presence of sinusitis.

Eisenberg reaches these conclusions:

- 1. Hexamethylenamine is a valuable remedy in the treatment of the inflammatory conditions of the upper respiratory tract.
- 2. It must be given in doses large enough to secure its full physiologic effects.
- 3. No untoward symptoms were observed while given in fairly large doses (up to 30 grains daily).
- 4. It seems to prevent possible complications of acute rhinitis, such as bronchitis and sinusitis.

#### ALCOHOL ANTIDOTE.

The Medical Times for July, 1912, tells us that ammonium chloride is recommended as an antidote to alcohol, given in doses of 30 to 60 grains, with copious draughts of water to prevent gastrointestinal irritation. It prevents the effects of the alcohol, sobers the patient quickly, and is a valuable preventive against delirium tremens. Should the patient not become quiet after taking the remedy, bromide or chloral hydrate may be administered.

#### ON THE TREATMENT OF SYPHILIS.

In the British Medical Journal of June 22, 1912, Power discusses the various popular ways of treating syphilis. He says that the first variation from the methodical and routine administration of mercury by the mouth or by inunction was the use of intramuscular injections. Experience soon taught that it was especially serviceable in those terrible forms to which the term "malignant syphilis" is applied, when mercury

was not well tolerated by the digestive tract, and when the patient could not be trusted to follow out his orders. The method of intramuscular injection was reduced to a system by the late Colonel F. J. Lambkin. The creams of calomel and metallic mercury which he invented give excellent results. Less pain attends their use than when other formulæ are employed, and in no case in his own wards was their administration followed by troublesome symptoms when care was taken to avoid the nerves and blood-vessels of the part where the injections were made. They learnt that it was better to have the creams dispensed in single doses, each in a hermetically sealed tube, rather than to fill the syringe from a larger supply which had been repeatedly heated to render it fluid. It was necessary also to sterilize the syringe by boiling it in olive oil immediately before use. The cream and the oil then mix readily, whereas bubbles are formed when the cream is drawn up into a syringe which has been boiled in water. The routine treatment was identical with that recommended by Colonel Lambkin, namely:

1. Four injections of calomel cream delivered deeply into the gluteal region. Each injection consists of 10 minims of cream, the dose containing ½ grain of calomel. The cream is made according to the formula:

Calomel, 5 grammes; Creosote, Camphoric acid, ää 20 Cc.; Palmitin basis, 100 Cc.

2. The injections are made at intervals of a week, and at the end of a month they are replaced by a cream containing 1 grain of metallic mercury in every 10 minims. The composition of this mercurial cream is:

Metallic mercury, 10 grammes; Creosote, Camphoric acid, ää 20 Cc.; Palmitin basis, 100 Cc.

Two weekly injections of this metallic mercury cream are given.

3. No injections are given for two months after these six doses have been administered.

4. An injection of metallic mercurial cream is then given every fortnight for two months—that is, four injections.

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- 5. No injections are given for four months.
- 6. An injection of metallic mercurial cream is given every fortnight for two months—that is, four injections.
  - 7. No injections for six months.
- 8. An injection of metallic mercurial cream is given every fortnight for two months—that is, four injections.
  - 9. No injection for one month.
- 10. An injection of metallic mercurial cream every fortnight for two months.

Colonel Lambkin's method marks a distinct advance in the treatment of syphilis. He regarded mercury as a curative agent, and gave it systematically to that end. It is well adapted for the army and navy, and it can be employed advantageously in hospital practice if the patient can be interested in his cure and will attend once a week for the injection. It is less fitted for private practice, where the mere mention of a needle prick is often sufficient to frighten a patient, whilst the needle itself is necessarily longer and stouter than that of a hypodermic syringe. Unskilled technique, too, has caused hematomata, painful indurations, and, occasionally, deep-seated abscesses. The knowledge that such accidents have happened had also had some effect in limiting the more extensive use of a valuable method.

In private practice, therefore, when a patient has declined to be treated by intramuscular injection, and recourse has been had to mercury perchloride and potassium iodide, he has tried to make the mixture somewhat less nauseous than that usually prescribed. He applied to Mr. Langford Moore and Mr. S. Tweedie, the dispensers at St. Bartholomew's Hospital, who recommended the following formulæ after making a large number of experiments. In both prescriptions the metallic flavor of the mercury and the acridity of the potassium iodide are successfully masked. The first prescription is for those who like sweet

tastes; the second is for those who prefer bitters.

- R Liquor hydrargyri perchloridi, f\(\frac{5}{3}\);
  Potassii iodidi, \(\frac{5}{3}\);
  Syrupi, f\(\frac{5}{3}\);
  Mucilag. tragacanth., f\(\frac{5}{3}\)i;
  Ol. amygdal. essent. (sine HCN), m. ij;
  Ol. cinnamomi, m. ij;
  Aq. chloroformi, ad f\(\frac{5}{3}\)viij.
- M. Fiat mist. Sig.: Take an eighth part three times daily.
  - R. Liquor hydrargyri perchloridi, f3j;
     Potassii iodidi, 3j;
     Tinct. chirettæ, f3jss;
     Elixir glucidi, m. xl;
     Infusi. gentianæ, ad f3viij.
- M. Fiat mist. Sig.: Take an eighth part three times daily.

Power does not speak from personal experience of the value of the arylarsonates and soamin. The accounts of these remedies did not appear to be very satisfactory, and before he had made up his mind to employ them they had been replaced by salvarsan. It has been extensively employed in his wards, and he thinks highly of it as a remedy for syphilitic manifestations, although we have not as yet sufficient evidence to prove that it cures the disease. He has always used it, therefore, as an adjuvant to mercury, and never by itself or in place of mercury. The present working hypotheses are that salvarsan kills adult and free spirochætæ, whilst it has but little effect upon those which do not lie in close relation with the blood and lymph paths, upon the immature forms, or upon those which are in an intracellular stage. Whether or not we choose to employ one of these hypotheses, two great facts stand out in connection with the action of salvarsan in syphilis—it cures the symptoms of syphilis in a shorter time than mercury, and it can be employed as a test for syphilis, because in many cases when salvarsan is given to a syphilitic patient whose Wassermann test is negative, the first effect of the injection is to render the reaction positive, although in a short time it again becomes negative. Salvarsan promises, therefore, to be useful as a test for the cure of syphilis effected by other means.

Much benefit is derived undoubtedly from the use of salvarsan, but it is useless to expect miraculous effects from a single injection. It is necessary to use salvarsan methodically if the best results are to be obtained, and the injections must be repeated at intervals of a fortnight to a month. If they are given too near together time is not allowed for the large dose of arsenic to be eliminated, and the symptoms attending the second dose may be more severe than the first.

The net outcome of his experience with salvarsan has been that it serves as an excellent adjuvant to mercury in the treatment of syphilitic lesions. It has proved especially useful in cases of chronic superficial glossitis, in active syphilitic periostitis, and in ulcerating syphilides of the skin. It has been less serviceable in craniotabes. and in cases of osteitis associated with the formation of sequestra, because in these conditions the pyogenic organisms are more important than the syphilitic infection; neither have the results been very satisfactory in cases of syphilitic arthritis, doubtless because many of these inflammations are also associated with a tuberculous infection. So far as he is able to ascertain. no serious accident occurred in his cases. Recognizing he was dealing with a powerful arsenical compound he has endeavored to eliminate the more obvious risks.

### THE OPHTHALMOLOGY OF GENERAL PRACTICE.

As to the treatment of conjunctivitis HEPBURN has this to say in the Lancet of July 6, 1912:

The general practitioner is expected to cure conjunctivitis, and in order to treat it effectually he must recognize one or two different types. The commonest form is where the whole eye is intensely injected, accompanied by a profuse mucopurulent discharge; this causes the lids to become glued together in the morning, which is one of the leading symptoms of this variety. Unless the cornea is secondarily affected

there is no photophobia, and the ordinary methods of cleanliness will in the course of a week or two bring about a cure. It is, however, advisable to use a lotion, either boric acid (gr. x to 3j) or perchloride of mercury (1 in 5000), for washing out the eves three times a day and to apply some boric ointment or vaselin along the edge of the lids at night to prevent them from sticking. Hepburn has frequently noticed that many practitioners in treating conjunctivitis omit to prescribe the ointment, whereas he thinks it is perhaps the most important part of the treatment. Whatever we apply to the eyes during the day, if the lids are closed at night for several hours the organisms remaining in the conjunctival sac will grow more quickly under such favorable conditions and continue to reinfect the conjunctiva each day, thus keeping up the inflammatory action for a much longer period than otherwise would be the case.

Another form of conjunctivitis that must be recognized is the angular, which persists for a very long time, and, unlike the last form, will not get well unless treated in the proper manner. It is an inflammation of the conjunctiva which is mostly confined to the outer and inner canthi, extending over on to the skin at these points, some redness being also found along the edge of the lids. It is not accompanied by much discharge, though slight stickiness in the morning is usually complained of. Whatever lotion is used, sulphate of zinc (gr. j or ij to 3j) must form one of the ingredients, otherwise no improvement will result; zinc is a specific for the organism found in this kind of conjunctivitis, and is the basis of all successful treatment.

From a busy practitioner's point of view most conjunctivitis cases may be classed in one or other of these categories, and an inflammation of the conjunctiva which appears to be getting chronic is often benefited with zinc. In any specially stubborn variety the lids may be everted and their conjunctival surfaces painted with protargol (20 or 30 per cent), and, if this is not successful, with silver nitrate (gr. x to 5j), applied by

means of a cotton-wool swab on a glass rod. But occasionally much more severe forms of conjunctivitis will be brought to the medical man. Ophthalmia neonatorum or gonorrheal conjunctivitis is one of this kind, and is a special type of mucopurulent conjunctivitis, due in the majority of cases to the presence of the gonococcus: it occurs usually in infants, though the same condition is found more rarely in adults. It is extremely dangerous owing to the liability of the cornea to become quickly involved, when it often results in the loss of the eye. Now this fact is well known to the general practitioner, and he is therefore eager to make himself familiar with the proper form of treatment. He knows that 2-per-cent silver nitrate is the staple remedy, and he often becomes so overanxious that he applies this antiseptic with such vigor that it sometimes causes the very complications he has set himself to avoid. The proper line of treatment is to wash out the eye with perchloride of mercury (1 in 5000) or boric acid lotion every hour during the day, and every four hours during the night, steps being taken at the same time to cover up the other eye, if still unaffected. with a Buller's shield or some similar apparatus; the lids must be everted and painted once a day only with 2-per-cent silver nitrate by means of a swab of wool fixed on a glass rod so long as there is copious purulent discharge, and some ointment must be applied to the edges of the lids to prevent them sticking together. As soon as the discharge becomes distinctly less in amount it is better to employ weaker remedies, such as protargol for painting and a milder lotion; in this manner the effects of overzealous treatment can be best avoided, and there is perhaps no class of case where a change of treatment is followed by more beneficial results. Every day the cornea must be carefully inspected, the lids being kept apart, if necessary, by retractors, and as soon as it appears in the slightest degree hazy, atropine drops or ointment (1 per cent) must be applied at once, so that, in the event of a perforation occurring, there may be

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less likelihood of inclusion of the iris in the wound.

A common form of conjunctivitis found mostly in children is the phlyctenular type. This may or may not be accompanied by photophobia, according to whether the cornea is affected or not, and the treatment differs also. In a simple case it is usual to give some slightly stimulating lotion, such as perchloride of mercury, to wash out the eye with, and if only the sclerotic be affected a little boric ointment gently rubbed over the eye by means of the closed lid will often suffice to bring about a rapid cure. Yellow oxide of mercury is seldom necessary in simple cases, and only irritates the ulcer when there is corneal complication. If the phlyctenule spreads on to the cornea a phlyctenular ulcer is produced, and the case must then be treated as a corneal affection, viz., with atropine ointment or drops (1 per cent). Intense photophobia always accompanies this condition and is generally indicative of the extent of involvement of the cornea; it often makes examination extremely difficult, but as perforation not uncommonly occurs an occasional inspection of the cornea is essential in order to see whether the atropine is taking effect. Ill health is a predisposing cause, so that a primary part of the treatment is to attend to this by means of tonics, general hygiene, and change of air.

Any unusual or atypical form of conjunctivitis is often confined to one eye for a long time and defies all the ordinary methods of treatment. Under these circumstances it is advisable always to evert the lid and make a thorough examination of the conjunctiva on its inner surface; in this way trachoma, some conjunctival growth, etc., may be detected and special treatment must be adopted. But a good rule to follow is to obtain an expert opinion whenever conjunctivitis resists for several weeks the ordinary methods of treatment described above.

Affections of the cornea are usually either ulcerations of various types with special characteristics according to the organism present or interstitial keratitis. Ulcers of

the cornea may be (1) superficial, associated with some slight conjunctivitis on which the condition of the cornea depends; (2) phlyctenular; (3) hypopyon; or (4) rare forms of ulceration. But from the general practitioner's point of view there is no need to commit oneself to any special diagnosis, since the line of treatment is practically the same in all forms of corneal ulceration. Treatment applicable to special types, after the ordinary methods have failed, is better carried out either by or after the advice of an ophthalmic surgeon.

It is well to bear in mind that, generally speaking, whenever the cornea is affected photophobia or a pricking sensation is complained of, and this symptom, though often unaccompanied by any visible manifestation of loss of tissue, should never be neglected. Conjunctivitis alone never gives rise to this symptom, and it is an indication that the cornea has become involved.

If in doubt about the condition of a cornea there are three methods of investigating in order to make certain on the point: (1) Loss of the natural brilliancy of any part. (2) Staining. A drop of fluorescin (2 per cent in saline) instilled into an eye will stain any ulceration of the cornea a greenish color. (3) Examination with a small corneal magnifying lens. This will often render visible small spots too minute to be detected with the naked eye even after staining. Phlyctenular ulcers have already been referred to under conjunctivitis and the possibility of perforation must always be kept in mind. But the two most dangerous and urgent ulcerations of the cornea are (1) the results of ophthalmia neonatorum or gonorrheal conjunctivitis, and (2) hypopyon ulcer. The former all general practitioners are on the lookout for, but the latter will often escape observation unless special attention be directed to it, since, contrary to expectation, it is generally unaccompanied by any pain or photophobia, and it is therefore wise to look for pus in the anterior chamber in every case of ulcer which is obviously severe and yet with absence of photophobia. Both these

conditions, if temporized with, may lead to the loss of an eye in the course of a few days, and it is therefore advisable to share the responsibility as early as possible. The same may be said of any case in which the corneal condition does not show signs of improvement after a few weeks of the ordinary methods of treatment. All cases of ulceration of the cornea must be treated by washing out the conjunctival sac with some form of non-irritating antiseptic lotion as for conjunctivitis, and applying either atropine drops or ointment (1/2 to 1 per cent), no matter where the position of the ulcer may be. Provided there is no conjunctival discharge, the eye should be tied up and the irritation from bright light guarded against by wearing smoked glasses; this is better than confinement in a darkened room, which is apt to become depressing. Attention to the general health is always necessary in addition to local applications.

Interstitial keratitis (usually but by no means invariably due to congenital syphilis) is almost always an alarming condition to the general practitioner. Starting as an intense and deep vascularity of the cornea in the upper or lower quadrant (or both) at the limbus, it rapidly covers the whole of the cornea and gives rise to a whitish-red infiltration which effectually obstructs all rays of light, and the patient is blind to all intents and purposes. A vigorous and perfectly correct line of treatment seldom has any influence in checking its course up to this point, and the appearance of the eye and effect on the sight are so alarming to the patients and their friends that the general practitioner is continually bombarded with questions which he has considerable difficulty in circumventing if his knowledge of the subject happens to be limited.

Bathing the outside of the eye with as hot water as can be borne, the instillation of atropine, tonics, and the exclusion of light by dark glasses is the treatment to be carried out in order to obviate complications which often arise in the course of this disease; otherwise the cure is largely a question of time. It is characteristic of intersti-

tial keratitis (certainly of the syphilitic variety) that, considering the apparently serious limits to which the eye has been reduced, the recovery may be so complete that the ultimate damage to the sight is surprisingly small, and the vision may be little, if at all, below the normal. This piece of information is an invaluable asset to the general practitioner's stock of knowledge at a more critical stage of the disease.

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# INTESTINAL IMPLANTATION OF THE BACILLUS LACTIS BULGARICUS IN CERTAIN INTESTINAL CONDITIONS OF INFANTS.

In the Journal of the American Medical Association of June 29, 1912, CLOCK gives the following summary and conclusions as to his views on this subject:

- 1. The infants varied in age from five weeks to ten months; there was one five weeks old; one six weeks old; one eight weeks old; one two months of age; four were three months old; three were four months old; two were five months old; three were six months old; two were seven months old; two were eight months old; and there was one nine months old, and one infant ten months old.
- 2. There were two cases of enterocolitis and twenty cases of gastroenteritis; of the latter, five were of the mild form, nine were of the severe type, and six were toxic.
- 3. The duration of the gastroenteritis, prior to the institution of the implantation method of treatment, was from one day to five days in the mild forms, from one day to two weeks in the severe types, and from one week to two weeks in the toxic forms. The intestinal condition had persisted in the two cases of enterocolitis from two to four weeks.
- 4. The two cases of enterocolitis had resisted other methods of treatment, but quickly responded to the implantation method.
- 5. Decided improvement followed in every case within twenty-four hours after beginning treatment.

- 6. The putrefactive process entirely disappeared, and the stools became normal in consistency and color on the fourth day, as a rule; and by the end of a week, in spite of previous loss, the weight had increased, on an average, 4½ ounces.
- 7. The results were complete and permanent in every case; there was not a single failure or relapse.
- 8. The culture was mixed with milksugar; the tablet quickly dissolved in water, and was readily taken by the babies.
- 9. One of the great advantages of this method of treatment is that it is unattended with any untoward effect, 20 tablets having been given in the twenty-four hours to infants of five and six weeks of age.
- 10. Another advantage is that the treatment does not conflict or interfere in any way with the diet of the baby.
- 11. The diets consisted of condensed milk, top-milk formulas, mild modified with proprietary foods, whole milk and barley water, peptogenic milk, whey and dextronized barley gruel, and modified milk with milk-sugar.
- 12. The favorable results that followed in those cases which were on a diet of condensed milk were due to the fact that B. lactis bulgaricus flourishes best in a rich carbohydrate medium, whether this be lactose, maltose, saccharose, or glucose.
- 13. Vomiting invariably ceased on the second day. This is to be explained by the fact that, after the putrefactive process in the intestine had been controlled, the reflex condition in the stomach quickly subsided.
- 14. Fever was absent in the mild and severe gastroenteritis cases.
- 15. The temperature which had been present in all of the cases of toxic gastro-enteritis and in the enterocolitis cases quickly dropped to normal under the implantation treatment.
- 16. With one exception there was steady gain in weight on this method of treatment.
- 17. One patient had been rapidly losing weight up to the time of beginning the implantation treatment; and while there was a temporary loss during the first three days,

the weight after this time steadily increased and showed a gain of 5 ounces at the end of the first week.

- 18. The average gain in weight during the first week was  $4\frac{1}{2}$  ounces.
- 19. After the stools became normal, the dried culture was administered three times daily for a period of one to two weeks.
- 20. The negative results previously obtained with the various other dried cultures were unquestionably due to the small numbers of the true B. lactis bulgaricus present in the tablets, which contained chiefly the paralactic bacilli.
- 21. The results in the cases reported were due solely to the action of the B. lactis bulgaricus, since no other therapeutic measures were employed, nor was the diet altered in any case.

#### SURGERY OF THE THYMUS GLAND.

MAYO (CHARLES) holds (Annals of Surgery, July, 1912) that surgically a somewhat exaggerated importance has been attached to the thymus gland, nor is he in accord with the belief that an enlarged thymus will be found in all operative cases of Graves's disease. He considers it probable that some cases of sudden death, especially in children, either during or following operation, have been attributed to status lymphaticus as a means of distracting attention from the anesthetic as a factor. In some of these deaths, in which no great enlargement of the gland was evident at autopsy, it has been taken for granted that there must have been a temporary sudden congestion which naturally disappeared with the termination.

Less than fifty operations have been performed for removal of the thymus; most of these because of chronic and recurring stridor or dyspnea. Olivier reports 42 thymectomies with 23 cures. Dypsnea was relieved in 25 cases out of 28; the crises of suffocation in 10 out of 12, and the stridor in 10 out of 16. There were 15 deaths in the 42 cases, mostly due to sepsis, consequent to the complications of tracheotomy or possibly from difficulties of drainage.

The technique is as follows: A curved in-

cision, which includes skin and platysma, is made low in the neck. The inner borders of the attachments of the sternomastoid muscles are incised; the sternohyoids are cut across. If the thymus be enlarged, it is seen as a pinkish gland projecting into the neck from behind the sternum, at least dur-The gland may now be ing expiration. caught gently with clamps and drawn upon until the fingers can be used for direct trac-The vessels are not large, the fascia which encloses the gland is loose, and there is but little difficulty in clamping and ligating as one lobe is removed. If it be deemed necessary, the second lobe can be elevated and a portion of it removed. A drain should not be used unless indications for drainage are urgent. In case it be advisable, a folded strip of rubber tissue should suffice for the few hours during which the procedure may be necessary.

One case is reported of an eleven months old child, exhibiting difficult respiration since birth from obstruction of the wind-pipe. There was frequent vomiting and exacerbations of dyspnea. The enlarged thymus was diagnosed by percussion dulness and by the x-ray. The right lobe was excised. This was followed by gradual improvement.

### TRANSFUSION IN A CASE OF TOXEMIA OF EARLY PREGNANCY.

KEATOR (American Journal of Obstetrics, June, 1912) records a case of pernicious vomiting of pregnancy which seemed to resist all treatment and which developed the unusual symptoms of purpura and hemophilia. The urine examination showed a trace of albumin and occasional hyaline casts and some red-blood cells. Because of persistent vomiting the uterus was emptied of a three months' fetus. Following this the patient continued to suffer from nosebleed, blood-streaked sputum, and bloody urine, the packing which was placed in the vagina showing a tendency to ooze. As it was not possible to remove this packing without free bleeding, and the patient was becoming delirious and dyspneic, transfusion from the husband was practiced. The patient's pulse remained at 140. Shortly she became semicomatose and collapsed. Thereafter she became blue and pulseless and had a chill. The subsequent convalescence was slow but uneventful.

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# SIMPLIFICATION OF THE RADICAL CURE OF HERNIA IN CHILDREN.

MARTIN (Revue Médicale de la Suisse Romande, Nov. 20, 1911, quoted in the Medical Chronicle, June, 1912) notes that the chief feature of Lorthioir's operation consists in leaving the stump of the sac which has been removed at as high a level as possible without division of the external oblique, and without insertion of either ligature or suture. An incision only one and a half inches long is necessary, and the wound can be closed with a couple of sutures or Michel's clips. One great advantage is that the operation takes from two to five minutes only, and the child generally takes the breast three or four hours afterward. In children under three years of age aponeurotic sutures are not inserted; occasionally in older children a suture may be used to diminish the size of the external ring.

The writer is of the opinion that Michel's clips are preferable in this region, since ordinary skin sutures, which enter the subcutaneous tissues, make infection possible by way of the suture holes along the sutures themselves. The majority of the children at the breast are not detained in hospital.

He operates upon weakly children suffering from gastrointestinal disorders without waiting until the health is good, holding that the hernia is often responsible for the alimentary symptoms.

The writer has performed the operation fifty-eight times with one recurrence. This was in a patient with a double inguinal hernia, that on the left side containing the appendix. The recurrence took place on the left side the same evening and was spontaneously reduced, but again the hernia appeared, this time with symptoms of strangu-

lation, on the day following. The wound was therefore opened, the cecum and appendix which were found in the scrotum reduced, and the external ring sutured. An uneventful recovery followed.

Lorthioir in his 2000 cases had three recurrences, all in the first twenty-four hours; in each case he operated immediately, reduced the bowel, and sutured the ring, with ultimate success. He has never met with a recurrence after a long period whilst practicing this method, nor has he ever met with any mishap attributable to the modification. He was first led to this procedure by finding the scar which had been left by the ligature or suture of the stump at the bottom of almost every sac on which he had to operate for the recurrence of a hernia; and he is of the opinion that the depression formed by a ligature or suture tends of itself to form a new hernia.

The gap in the peritoneal wall is not harmful. An examination of the internal rings of two children operated upon by his simplification and dead from intercurrent maladies showed no intestinal adhesions; nor have any children afterward suffered from intestinal symptoms which could be attributed to adhesions.

#### EXPERIMENTAL STUDY OF THE EF-FECTS OF URETERAL OBSTRUC-TION OF KIDNEY FUNCTION AND STRUCTURE.

BEER (American Journal of the Medical Sciences, June, 1912) concludes his report of laboratory work as follows:

Infection of a non-stenosed ureter may lead to a hydronephrosis. Perhaps this explains some of the cases of hydronephrosis in which no mechanical cause is found.

Infection of the ureter rarely leads to abscess formation, to multiple abscesses of kidney, unless the ureter is stenosed, and then only when the injected organisms are virulent.

Aseptic ligation of the ureter leads regularly to a primary hydroureter, and at about three weeks atrophy and shrinking of the hydronephrotic sac begin. The idea that the use of catgut ligature material in pelvic work will not cause a permanent ureteral stenosis, if this organ is tied off, is erroneous.

Three to four months after ligation of the ureter the kidney is represented by a small fibrous mass, provided infection is not present. If infection is introduced a huge hydronephrotic sac without vestige of parenchyma results.

In face of infection, stones readily form both in the pelvis and bladder.

After three weeks' exclusion sufficient parenchyma persists to warrant an attempt at secondary implantation of the ureter into the bladder.

### GUNSHOT WOUNDS IN MILITARY SURGERY.

HARTSOCK (Military Surgeon, July, 1912) uses United States service arms as an illustration in the wounds which he describes, pointing out that the various other small arms of the foreign powers differ so little in essentials that the wounds produced are practically the same in character.

The bullet is of .30 caliber and weighs 150 grains, and is propelled by a charge of 50 grains of nitroglycerin powder. At the muzzle of the rifle it will penetrate ¼ inch of steel plate, and at 500 yards 32 inches of pine wood. The decrease in velocity explains the difference in effect on tissue at short and long range.

The rifle is sighted to 3000 yards, but carries a distance of 5465 yards at extreme elevation. The trajectory of the bullet is such that with the enemy firing standing there would be a point-blank danger space of 718 yards. Most of the wounds inflicted correspond with those received at 1200 yards or less.

Due to the extreme twist in the rifling, the bullet maintains a gyroscopic steadiness up to the battle range of over 1200 yards, with a flat trajectory of 700 yards. After the extreme range a slight wobbling occurs, and it is thus apparent that keyholing or marked deflection will take place and a consequent

jagged wound with extreme exit laceration. Because of the greater weight at the base, recent experiments have demonstrated that the following effects may be noted:

Explosive effects are common up to 500 yards and are noted in soft tissues as well as bone. Bony tissue is ordinarily comminuted, especially on the distal side of the injury—this applies as well to compact bone as to cancellous.

Lacerations of viscera are severe. cause of easy deflection, the bullet will not follow the line of entrance but will often lodge in distant parts. It may be said that wounds of greatest severity may be expected from the recent modifications. With the modern bullet we encounter one special point not formerly considered in connection with that of the low-powered arms—that is, its explosive effect. The projectile has a terrific impact and imparts its acquired energy to the tissues adjacent in a certain ratio to its velocity and distance. The tissues fail to adjust themselves quickly enough to prevent the quick radiation of the bullet's energy, so that for a great distance from the point of impact the tissues are displaced with almost as great ratio of violence as in the wound itself. The extreme velocity of the bullet does not produce sufficient heat to render it sterile. Bullets rarely acquire a temperature of over 95°. An undeflected bullet at battle range invariably produces a very small wound of entrance, not larger than the end of a leadpencil, with the edges slightly raised, and with, frequently, an area of ecchymosis around the entrance.

A perforating effect is noted on soft tissue and spongy bone at mid-ranges. An explosive effect is noted at ranges under 700 yards, and great laceration over 1200 yards.

The wound of exit varies considerably because of the tissue encountered; at short range the laceration of soft parts is quite severe—for example, in the thigh or arm an exit wound of 3 inches diameter is common, the intervening tissue presenting a cone-shaped, pulpified mass. On hard

bone at any range extreme comminution is the rule, particles of bone being driven sometimes to a considerable distance from the wounded part.

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Hemorrhage as a complication may be said to be immediately fatal or slight; the larger vessels are more sharply severed, permitting free bleeding, but possibly due to vasomotor contraction the smaller vessels give little trouble.

General shock is often not great in proportion to the trauma, though more severe in thoracic and abdominal perforations. Local shock is severe, and local function is lost in the area about nerves, blood-vessels, and extremities, even for days.

Ordinarily, just after an injury, pain is not an immediate complication in a severe form, probably because of the local shock and injury to sensory nerves, but extreme pain will be encountered later upon reaction.

A goodly proportion of lacerated wounds are encountered, due to deformed bullets from ricochet and long-range shots in which the bullet has lost its balance, and keyholes.

These cases are frequently infected from earth and clothing, and laceration is severe; the entrance wound being very large, lodgment of the projectile or pieces of its jacket is frequent.

It is probable that 75 per cent of brain injuries prove fatal, either immediately or within twenty-four hours.

Cases experiencing the explosive effect of the bullet under battle range made up largely this group.

Extensive operative proceedings should not be undertaken, and the work should be done with the minimum sacrifice of bony tissue. Hernia cerebri is most common after these cases and extremely troublesome to handle.

Small trephine openings, rapid exploration and closed wounds, with no aftermanipulation, give the best results.

Gunshot' wounds of the heart or great vessels prove almost immediately fatal. Pulmonary wounds, including a large proportion of those demanding treatment, furnish the best proportionate results from proper care. Shock and hemorrhage are the prominent symptoms. Hemorrhage is present in about 90 per cent of the cases in sufficiently great quantity to be considered as a hemothorax. The lung rarely furnishes bleeding, this coming from the parietal vessels, particularly the intercostal. Pneumothorax is not a common sequel. Pneumonia is an unusual sequel. The correct line of treatment in lung cases lies in what not to do, rather than in extensive surgical interferences. Nearly all hemorrhagic effusions into the pleura will clear up in time. Unwarranted interference by operative measures will surely result in an empyema, in cases treated as they are under war conditions. Evacuation by the Potain aspirator may be necessary where pressure symptoms are great, but incision is absolutely contraindicated. Absolute rest is essential; the wound of entrance should be sealed, the chest strapped, opium freely administered, and the patient left to nature.

Wounds of the abdomen furnish the greatest percentage of mortality. One-third of the cases of abdominal perforation die within twenty-four hours. After three days the mortality rate will have increased to 75 per cent.

Up to 700 yards, the liver, spleen, and kidneys are pulpified; with the lowered velocity at longer ranges, the local destruction is limited and recovery may take place in the absence of infection.

Liver wounds are apt to be accompanied by great shock as well as hemorrhage, and uncomplicated perforations are rare.

Immediate shock in abdominal injuries does not always follow; yet all cases with visceral perforation exhibit shock within the hour. It is a strange fact that local shock manifested by intestinal paresis is frequent in perforations of the abdomen without injury to the viscera.

The surgeons of all armies have about agreed that the greatest good to the greatest number is obtained by not handling these injuries beyond the immediate antiseptic means demanded.

Injuries of the transverse or anteropos-

terior type in the small intestine area generally exhibit multiple perforations as well as injury to the mesentery, and are, poor risks. Wounds involving the liver proving not immediately fatal have a good chance, and should not be touched.

Kidney wounds heal kindly and frequently with no other symptoms than hematuria. Splenic wounds are likely to be fatal without operation, and excision will be necessary. Bladder injuries require immediate peroneal section, or at least continuous drainage by catheter.

Bone injuries on the battle-field are exceedingly difficult cases to handle, particularly where the injury involves the lower extremities. As these fractures are always open, and generally extremely comminuted, with the adjacent structures severely lacerated, the part is likely to become greatly swollen, even to the extent of interfering with its circulation, and acute traumatic gangrene is not infrequent.

Amputation will frequently be necessary. Spongy bone is frequently drilled cleanly through without interfering with the joint. When this occurs healing is prompt and the local trauma is not great enough to permanently destroy function.

### THE SURGICAL TREATMENT OF ANEURISM.

BARLING (Proceedings of the Royal Society of Medicine, June, 1912), after giving well-deserved credit to Matas for his work on the vascular system, notes that he was not able to find many cases of endoaneurismorrhaphy in the records of the British Isles. The total number was 16. nine collected from current literature and seven yet unpublished from friends. these 16 aneurisms, 1 was of the external iliac, 1 femoral, 11 popliteal, 2 subclavian, and 1 brachial. Fourteen were operated upon by the obliterative method; of these, one patient with external iliac aneurism died from sepsis. Gangrene of the leg supervened in this case and in one with popliteal aneurism. The two remaining operations were reconstructive, in patients with popliteal aneurism; in both the sac had already ruptured and both operations were followed by gangrene. Secondary hemorrhage or failure to cure is not referred to in any of the cases. There was therefore only one death, and apart from this case gangrene following operation in three other patients, all of whom recovered after amputation.

Rigby includes 19 cases operated on for popliteal aneurism by various methods other than that of Matas. Four of the patients suffered from gangrene of varying extent, one from secondary hemorrhage, and two died as the result of the operative proceedings, but in both of them the sac had ruptured.

As to the method of treating aneurism, obliteration is likely to hold the field for the majority of cases; it may be fairly said to have proved its claims. In carefully selected cases restoration of the artery promises brilliant results, and should certainly be adopted where possible. Reconstruction has not so clearly established its claims, and should be used but rarely, and when the conditions for reconstruction are unusually favorable.

Mr. D'Arcy Power, speaking for himself and Mr. G. H. Colt, said that the results of wiring by the older method combined with electrolysis between 1894 and 1910 are as follows:

Of 29 thoracic cases, two patients in whom the aneurism involved the origin of the left subclavian died, one on the second day and one on the twentieth day. Two in whom the aneurism involved the origin of the innominate artery died, one two months and one fourteen months after the operation. Of the rest, one died three and a half years after the operation, one was alive three years later at the time of the last report in October, 1910, and 20 others died at periods varying from two and a half days to ten months, the average duration of life being fourteen and a half weeks. One was alive three months after operation at the time the report was made. Many of these patients were in a desperate condition, and the relief of symptoms was well marked. Of seven abdominal cases, one died five years after operation, one died eight months afterward from dysentery, one died forty-seven days afterward, one died twenty days later, and three died from five and a half to forty hours after operation.

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Thereafter is described the gradual evolution of this method of treatment. The instrument consists of a trocar and cannula with which the sac is pierced; an additional barrel can be attached to the cannula, and this barrel contains a light wire frame in the form of a piston until it reaches the sac, where it opens out like an umbrella. The cages and wisps are made in different sizes, of fine, lissom steel wire, dull gilt, and the surface area presented for clotting may be calculated with great accuracy. Electrolysis has not been used with this last form of apparatus. The summary of cases is as follows:

One patient alive and well four years and nine months after operation; one patient alive and well one year and eight months after operation; one patient alive and well nine months after operation; one patient lived some months and died of pneumonia; one patient died two months later of leakage from sac; one patient died four days afterward from rupture of sac, not at site of puncture; one patient died a few days after operation from acute dilatation of stomach; one patient died two days after operation of ether pneumonia. The three patients who are alive and well have been entirely relieved of their pain. Death was probably hastened by a few days in two of the cases which ended fatally. One patient died of rupture of the sac externally, but the rupture was not at the seat of puncture.

It is interesting to note that there are practically no records of emboli. The contraindications are: Rapid increase of pain or of pressure symptoms; these are probably indicative of an early and fatal termination. If these symptoms pass away under treatment the question of operation can be again considered. The presence of a second

aneurism; sepsis; involvement of the transverse part of the arch. The cases recorded by Hodgson show clearly that the patient's discomfort is much increased by consolidation taking place in this situation.

Ballance, in discussing the question of popliteal aneurism, states that we have a safe and efficient method in the Hunterian ligature. In this opinion Symonds cordially concurs.

### END RESULTS OF FRACTURE OF THE FEMUR.

ESTES (Annals of Surgery, July, 1912) has summarized an admirable clinical study of this subject, based in part on 760 tabulated cases of fracture of the shaft of the femur, as follows:

The records of fracture cases are kept so incompletely that it is impossible in the United States to obtain full, accurate, and reliable data of a large number of finished cases. Fracture of the shaft of the femur is commonest in workingmen between the ages of twenty and fifty years; next in children under ten years. It is usually due to indirect violence and involves the middle third of the bone. The incidence of fracture in the lower and the upper thirds is about the same. Simple fractures far outnumber the compound and complicated ones. Of the collected cases the average shortening before reduction was 1.38 inches. The usual treatment was by some form of Buck's extension. Usually an anesthetic was not employed to assist in reducing the fractures. The average weight used in extension was 14 pounds. (Too little.)

The average reported shortening of completed cases is ½ inch. (Measurement usually from anterior iliac spine to inner malleolus.) Average length of time in bed, 8.2 weeks. Average length of time incapacitated, 2.7 months (this is probably a mistake). Average length of time crutches, canes, or other aids in walking were used, 8 weeks. Limp was present for some time in the large majority of cases. A little less than a fifth of the reported cases had in-

version or eversion of the foot or tilting of the pelvis from serious axial displacements. A little more than a tenth of the cases had excessive callus, which produced some disturbance.

Disability estimated by (a) endurance, (b) pain, (c) swelling, (d) interference with joint function, present in about one case in 25 reported.

Death-rate of reported cases, 3.69 per cent (this Estes believes is a mistake). Chief cause of death: (a) pneumonia, (b) shock and exhaustion, (c) delirium tremens.

Estes believes there is no reason from the study of this much larger number of cases to change the form or wording of the conclusions adopted by the Commission of the Pennsylvania State Medical Society in its report of last year, and he offers these as his present deductions.

The incomplete reports and the comparatively large number of cases which have been tabulated serve to indicate indubitably that this most important fracture and serious injury, in hospitals at least, does not receive the attention and care of the chief surgeons as a rule. Treatment is usually delegated to the interne staff, whose experience and anatomical and mechanical knowledge are wholly inadequate to meet the indications in a great many of the cases, and whose lack of order and thoroughness makes the records of the cases such unreliable data that it is very difficult for any one searching for the truth in the various phases of treatment to find what he wishes.

The first recommendation would be that teachers of surgery in medical schools should give more attention to their own investigation of fractures, and to the teaching of this most important branch of surgery to the students who belong to their classes

Second, while recognizing the fact that x-ray photographs may be most misleading, when taken by competent anatomists who understand the importance of proper relative position of tube and limb, and the importance of taking more than one view of the fracture, radiograms will furnish an

indication for the proper reduction and the mechanical appliances for the preservation of proper apposition, and will serve as a graphic record of the fracture itself.

These radiograms to be most valuable should be taken before reduction of the fracture; when it has been reduced and has a fixed dressing; and finally after union has taken place and the patient is able to be up and about.

In regard to the method of treatment, some form of traction is most commonly employed, and the results after such treatment in most cases enable the patient to resume his occupation and function without serious detriment. Properly taken x-ray pictures, however, show that absolute apposition and restoration of proper axis of the bone is seldom accomplished.

Deaths from simple fractures of the femur are 3.69 per cent of the cases; the reports show they occur almost wholly in cases of old age, from shock and exhaustion, or from pneumonia; in drinkers from delirium tremens; or from some operative interference.

It is evident that the open method introduces into the treatment of these cases such an element of danger that it cannot be recommended for general use nor recognized as a routine practice.

In selected cases in which it is impracticable to restore the fragments to their proper position, and in which mechanical means have failed within a reasonable time to produce proper restitution of the fragments, the open method may be employed, but then only by an experienced surgeon, one who habitually employs most thorough aseptic methods.

Some form of traction such as Buck's extension seems to be the preferable method of treatment. If Bardenheurer's suggestion of transverse traction over the ends of the fragments in order to overcome lateral displacements be added, it will greatly improve the results in many cases. Hamilton's apposition splints placed about the fracture at proper places will serve for this purpose in the majority of cases.

Plaster of Paris is also a valuable means of treating these fractures, but it should be applied under anesthesia. Complete relaxation, unconsciousness of pain, and laxity of muscle are necessary in applying the plaster dressing properly to these cases.

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The usual methods of measurement are inaccurate and give misleading records in regard to shortening. This is all the more the case because of the well-established anatomical fact that femurs vary in length, and rarely are two lower extremities exactly the same. Records show good functional results after apparent shortening of extremities up to an inch and a half. The results may be considered good if the measurements show no more than an inch of shortening, provided there is no inversion or eversion of the foot from angulation of the fragments.

The ordinarily employed method of measuring from the anterior superior spine of the ilium to the tip of the internal malleolus should be checked as a rule by some other measurement, as for instance measuring from the tip of the ensiform cartilage to the internal malleolus or patella, or from the middle of the umbilicus to the internal malleolus. In making all measurements it is important to be assured if possible that the pelvis is not tilted and that the anterior spines are in the same horizontal plane.

### THE CHETWOOD OPERATION FOR FECAL INCONTINENCE.

NEWMAN (The Proctologist, June, 1912) reports a case of fecal incontinence treated by the Chetwood operation, which is performed as follows:

Semilunar incision from one tuber ischii to the other, reaching slightly above the tip of the coccyx. The flap is dissected down, exposing the edge of the gluteus maximus muscle on either side. A ribbon of muscle a quarter of an inch wide and one-sixteenth of an inch thick is then dissected from the gluteus of each side, having the attachment above at the coccyx. The perianal tissue is then tunneled and the strips crossing each other beneath the coccygeal anal ligament

are brought around the anus. The strips are then attached to the remains of the sphincter and to each other. The skin flap is then sutured back into place.

In the case operated upon Newman made his muscle strips the thickness of the thumb. A heavy chromic ligature about the rectum was tied over the assistant's finger. The object was to support the muscle strips during healing. The patient lay on his stomach during the first week and had his bowels moved in the same position, and had to be catheterized the first ten days. He was discharged from the hospital one month later with the wound healed and the rectal condition greatly improved. One year and eight months after the operation the patient is perfectly well. He is able to control flatus and diarrheic movements. On digital examination there was experienced but slight resistance, so slight that it is difficult to account for the continence. When the patient contracts the sphincter neither the glutei nor the transplanted muscle strips contract.

Newman considers that this elaborate plastic simply acts as a living ligature that closes the gaping anus, draws together the divided sphincter, and thus restores its function. It cannot succeed when there is no external sphincter left.

Brun suggests using a strip of fascia lata, which he draws around the anal opening by means of a large aneurism needle. The ends are overlapped so as to narrow the anus to the caliber of an index-finger and sutured in this position to each other and the sphincter. In cases in which there is no sphincter remaining the operation devised by Shoemaker seems rational. It consists of dissection of muscle flaps three to four centimeters wide from either gluteus maximus, with preservation of the nerve and blood supply. These flaps are then drawn in front and behind the anal canal and sutured to each other and to the tuberosities of the ischium. Shoemaker demonstrated a patient operated on by this method. who was able to retain an injection of pure glycerin. Certainly a most brilliant result!

## OMENTOPEXY IN CIRRHOSIS OF THE LIVER.

Grant (Interstate Medical Journal, June, 1912) as the result of a clinical study of this subject, based on 144 operations collected from various sources, most of them not previously reported, and three cases of his own, concludes that even in the condition of advanced liver degeneration and general toxemia, with resulting ascites, over 10 per cent of symptomatic cures are obtained, and over 50 per cent at least are improved, comforted, and helped to months and years of life.

That as this advanced condition is often preceded by a year or more of latency, during which suspicious symptoms often declare the cause, early diagnosis of a lesion, which would surely lead only to the grave, justifies exploration and repair, with a far better promise than can be hoped for later on

That as it is not possible to be certain of the character of the cirrhotic lesion before exploration, the surgeon need not be deterred from the steps by an uncertainty as to its applicability, as all forms of cirrhosis are fatal under the expectant treatment.

#### OTITIC CEREBRAL ABSCESS.

An excellent summarization of this subject is given by Fraser and GARDINER (Edinburgh Medical Journal, July, 1912), based in the main on the teachings of Neumann and Ruttin. The cerebral abscess is about twice as common as the cerebellar. and, originating in the middle ear, is situated in the temporosphenoidal lobe. It is more common in the second and third decades, in the males, on the right side. It is usually due to an acute exacerbation of a chronic middle-ear suppuration. Particularly when the latter is complicated by cholesteatoma, acute otitis media, except for the acute suppurating form following bad cases of measles, scarlet fever, or influenza, is rarely followed by cerebral ab-Such complication is favored if a dehiscence be present in the roof of the middle-ear cleft between the squamous and petromastoid portions of the temporal bone, or if air cells in connection with the mastoid antrum extend into the posterior root of the zygoma. Chronic suppuration gives rise to four cerebral abscesses for every one due to acute otitis.

The organism is usually streptococcus in pure culture or combined with diplococci. In chronic cases, in addition to streptococci and staphylococci, the B. proteus, B. coli, B. pyocyaneus or diphtheroids may be present. If anaerobic organisms be found the prognosis is bad.

There are two forms of abscess, super-The superficial abscess ficial and deep. develops quietly by direct extension of the inflammatory process from the middle ear. The dura mater covering the roof of the tympanic cavity or antrum is first affected, and a pachymeningitis interna is set up, which spreads to the pia-arachnoid and superficial brain tissue. In the deep abscess, on the other hand, apparently healthy brain tissue intervenes between the dura and the abscess cavity. An extra-dural abscess is first formed, and then one or more of the veins passing from the brain substance to the dura become infected; thrombosis follows, and a deep abscess is the result. It is also said that infection may pass along the lymphatic channels. This deep abscess is situated in the white matter, and may thus press on, or otherwise affect, the tracts passing from the motor cortex through the internal capsule. The dura mater in the roof of the middle ear in cases of cerebral abscess is never quite normal; it may show a small fistula, a necrotic patch, or merely a change of color.

Brain abscesses may be (a) encapsulated, or (b) non-encapsulated.

- (a) The first variety is caused by capsulated organisms such as the pneumococcus or the streptococcus mucosus, which give rise to fibrin formation and thus produce a lining membrane. These abscesses have no pockets.
- (b) Non-capsulated abscesses are usually due to putrefactive pockets, and are formed

of ragged necrotic brain tissue surrounded by a zone of encephalitis or inflammatory edema. The non-capsulated group give rise to more marked symptoms and are much more dangerous, because the inflammatory edema is very liable to spread and cause death from sudden increase in intracranial It will thus be seen that bacpressure. teriological examination of the pus from a brain abscess is very important-e.g., if a patient have a rise of temperature fortyeight hours after operation on a cerebral abscess, and if the organism present was found to be the B. proteus, the wound cavity should be searched for pockets, whereas if, in similar circumstances, the organism was the pneumococcus, the trouble would probably be due to faulty drainage.

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The symptoms may be divided into three groups:

- 1. General toxic symptoms. In cases due to venous thrombosis there may be a slight rigor accompanied by fever at an early stage. The tongue is furred, appetite usually lost (though sometimes voracious), and the bowels are constipated. The patient sleeps badly, and his friends may notice that his character has altered.
- 2. Symptoms due to increased intracranial pressure. Headache, slow pulse, subnormal temperature, vomiting, and optic edema.
- 3. Focal symptoms. Local headache and tenderness on percussion; local swelling of the scalp; various forms of aphasia if abscess be on the left side; paresis or paralysis of the contralateral side; rarely loss of smell, or of hearing in opposite ear. If the abscess extends into the occipital lobe the patient may have homonymous hemiopia.

. The four stages of cerebral abscess merge into one another.

The initial stage lasts only a day or two. In the case of a superficial abscess the symptoms (if any) are overshadowed by those of the pachymeningitis. In the deep abscess on the other hand there is usually a slight rigor corresponding to the period of thrombosis of the cerebral vein. As a rule there is slight elevation of temperature, and

even at this stage deep abscesses may give rise to pressure symptoms.

In the latent stage the patient is lazy and drowsy and may drop off to sleep while being questioned. He suffers from headache, which is increased by anything which raises the blood-pressure—e.g., tea, coffee, alcohol, stooping, or mental effort. Cerebration is slow and the patient sleeps badly. tongue is furred, the breath foul, the appetite as a rule poor, and the bowels constipated. The patient is obviously ill, and his complexion is sallow. It is noteworthy that in the presence of an intracranial complication the leucocyte count and especially the polymorphs remain raised in spite of a mastoid operation; further, the operation cavity never heals if intracranial trouble be present. If the eyes be examined, early changes may sometimes be noted in the The patient's temperature is irregular, but the excursions are not large. There may be pain localized to the temporal region and tenderness on percussion; the note elicited may be higher on the affected side. The patient holds his head stiffly and walks carefully to avoid jolting. During sleep he may be observed to claw uneasily at the affected side of his head. If the diagnosis can be made at this stage the prognosis is much better than if operation be delayed until the manifest period; if, however, the mastoid operation alone be performed during the latent stage, the case at once passes on to the manifest stage.

In the manifest stage the headache increases as the abscess grows; it comes on in attacks and is more generalized. The temperature is subnormal and the pulse slow (40 to 60). Although the sight is not affected until the late stages, the increase in the intracranial pressure causes the edges of the optic disk to become blurred and the veins to be abnormally full and tortuous. This condition is usually bilateral and generally worse on the affected side. Vomiting is of the cerebral type—i.e., effortless and unrelated to the taking of food. If the deep abscess be on the left side it is usually situated between the centers for visual and

auditory memory, so that, although the patient can recognize simple objects, such as a knife or a pen, he cannot name them; he may, however, say they are "for cutting" or "for writing with." Again, he may recognize the object but give it a wrong name, or he may be able to name the object only when he handles it. Occasionally the phenomenon known as perseveration is present—i.e., if the patient be asked what day it is he may answer correctly (or otherwise) "Monday," but if questioned further, he merely keeps on repeating the word "Monday." If the abscess be situated in the white matter of the temporosphenoidal lobe it will in time press on the internal capsule and so produce paresis or paralysis of the opposite side, along with increase in the reflexes; as the lesion is supranuclear the muscles of the forehead are not affected. The third nerve, especially the fibers to the iris and levator palpebræ, may be affected; at first the pupil is contracted, but later on it becomes dilated, and there is drooping of the upper eyelid. If the abscess invade the occipital lobe, homonymous hemianopsia may be present. Rare cases are recorded in which the sense of smell is interfered with owing to involvement of the hippocampal convolution, while in others the hearing of the opposite ear may be affected owing to disease of the cortical hearing center on the affected side. Hearing tests in a case of cerebral abscess show middle-ear deafness on the diseased side, whereas in cerebellar cases the inner ear is frequently the seat of labyrinthitis.

In the terminal stage the patient gradually passes into a comatose condition; epileptic attacks have been recorded. A sudden attack of coma along with high temperature would indicate rupture of the abscess into the lateral ventricle.

About 50 per cent of cases are accompanied by another intracranial complication and are therefore unfavorable. From carefully compiled statistics it appears that only 30 per cent of cases are cured by operation.

If there is any suspicion of brain abscess, lumbar puncture should not be carried out

before operation. The abscess itself is best approached along the route of infectioni.e., by removal of the roof of the middleear cleft from the mastoid wound and exposure of an area of dura the size of half a crown: this should be done with the hammer and chisel. A crucial incision is now made in the dura and the brain explored with Preysing's knife or Horsley's pus seeker; the instrument must not penetrate more than 11/4 inches for fear of injury to the lateral ventricle. After the pus has been evacuated the cavity should not be washed out; it may be drained by one of three methods: (1) packing with a long strip of selvedge gauze through the encephaloscope; (2) by means of single or double drainage tubing; (3) by a cigarette drain. Whatever method be adopted, drainage should not be discontinued too early, and must at any rate be kept up as long as the discharge remains purulent. If the abscess be large a counteropening in the temporal region is advisable. Prolapse of the brain is often very troublesome, and is due to increased intracranial pressure caused by encephalitis or meningitis; it is best obviated by free removal of bone and good drainage. The prolapse should not be cut off unless it interferes with drainage. Brain abscesses heal badly owing to the arrangement of the cerebral blood-vessels (end arteries), and also because of the poor capacity of the neuroglia to form scar tissue.

### THE TREATMENT OF MALIGNANT TUMORS WITH MESOTHORIUM.

CZERNY and CAAN (Münchener medicinische Wochenschrift, Jahrg. 59, Nr. 14) have treated with mesothorium 85 cases of carcinoma, 12 of sarcoma, 8 of lymphosarcoma, 1 of endothelioma, 6 of angioma, and 6 of tuberculosis. Of 32 cases of recurrent mammary carcinoma, 19 showed a positive objective and subjective improvement. Six cases of carcinoma of the face were treated; in four cases a favorable result was obtained, the cancerous tissue disintegrating in a short time and its place being taken by

granulation tissue. In another case in a 73-year-old woman in whom the nose and eye were both involved, healing occurred after forty applications; in the sixth case healing was brought about in a carcinoma involving the lower eyelid.

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The treatment of deep-seated carcinoma is quite difficult by local application. In case of the esophagus a special sound upon which the mesothorium could be carried was devised. By this means ten cases of carcinoma of the esophagus were treated. In four of these there was marked improvement. In these cases, while before treatment either no sound or only a very thin one could be passed through the esophagus, after treatment a good-sized sound could be passed through; also difficulties in swallowing with which the patients had suffered were partly or wholly relieved and the patients gained in weight.

Two cases of cancer of the tongue out of nine treated were much improved. Other cases benefited were cancer of the rectum, 6; of the upper jaw, 5; of the lip, 4; of the uterus, 3; of the stomach, 2; of the gall-bladder, larynx, lower jaw, cheek, testicle, and hand, each 1. In one case of cancer of the cheek the use of mesothorium seemed to hasten the spread of the affection.

The 12 cases of sarcoma including three recurrent cases were all greatly improved. The eight cases of lymphosarcoma proved very refractory, while eight cases of tuberculosis, most of which were lupus of the face, and six cases of angioma, were almost without exception treated with success.

## NON-MALIGNANT STRICTURE OF THE RECTUM.

MUMMERY (The Practitioner, June, 1912) writing on this topic observes that since the introduction of Whitehead's operation for piles quite a number of strictures of the anal orifice, or just above it, have been met with as the result.

Furthermore, he states that one of the worst rectal strictures he had ever seen was in a lady who, ten years previously, had been treated for prolapse of the rectum by the injection of paraffin wax into the perirectal tissues. This lady exhibited tubular stricture several inches long and extending up into the sigmoid flexure.

The author states that the lady could only move her bowels by means of a long rectal tube and much patience. The somewhat surprising statement is made in reference to syphilis as the cause of rectal stricture that no evidence that can be considered satisfactory has been brought forward to prove it.

Mummery has seen benefit follow the injection of 3 grains of fibrolysin into the buttocks every two or three days.

Proctotomy is rejected; excision is considered the method of choice. Whitehead's operation is applicable when narrowing is near the anus. The mucous membrane is dissected up, in the same way as in Whitehead's operation for piles, until it has been freed well above the stricture; it is then drawn down until normal mucosa can be made to reach the skin.

#### SEVERE GASTRIC CRISES OF TABES CURED BY SECTION OF THE POS-TERIOR NERVE ROOTS.

Bramwell and Thomson (Edinburgh Medical Journal, June, 1912) report the case of a 33-year-old man who gave a history of chancre in 1901 without secondary symptoms. Ten months thereafter he suffered from attacks of pain in the stomach and vomiting. These attacks continued to recur with increasing severity until the time of operation. After the gastric crises his sight became dim and finally he became blind. A year after the sight became affected he began to suffer from severe lightning pains in the legs, and these pains continued until the operation was performed. The bladder became affected; the knee-jerks and Achilles-jerks were absent; the pupils showed the Argyll-Robertson condition; there was well-marked thoracic and ulnar analgesia. Charcot's disease of the right knee-joint developed. The ataxia was extreme.

Lumbar puncture showed no abnormality in the spinal fluid. The Wassermann reaction was negative. The patient never went for longer than nine weeks without a gastric crisis. His last attack lasted for eighteen davs. Thomson resected four pairs of nerves, the seventh to the tenth inclusive some to a centimeter, others to a centimeter and a half. The dura was stitched up, and the muscles in successive layers. were filmy adhesions between the dura and the cord. The wound was slow in healing, but now, seven months since operation, there has not been a single gastric crisis. Moreover, the lightning pains in the legs disappeared. The patient's general health has greatly improved. He walks better, according to the statements of the nurses.

#### RESULTS OF OPERATION FOR INTRA-CRANIAL TUMOR.

VON EISELSBERG (Wien. klin. Wochenschr., 1912, p. 17; quoted in the Edinburgh Medical Journal, June, 1912) reports on 100 cases in all.

A decompression operation was carried out in 10 cases in which the location of the tumor was uncertain; six of these patients left the hospital much relieved, in two there was no improvement, while two died soon after the operation. The tumor was believed to be in one of the following situations in the remaining 90 cases, and operation undertaken for its removal, viz.: Cerebrum 43, cerebellum 22, cerebello-pontine angle 12, pituitary 13.

The growth was correctly located in 32 of the 43 cerebral cases. In nine of these 32 death occurred as a result of the operation; four of the remaining 23 cannot be traced, while eight are living from twelve months to five years, and four from two weeks to six months, after the operation.

The tumor was found in 11 of the 22 cerebellar cases. Five of the 11 died after the first stage of the operation, no attempt having been made to remove the growth; in one the tumor was so extensive that it was decided not to attempt to remove it; of the remaining five, one died of shock, and two

soon after the operation of tuberculous meningitis, while one patient from whom a spindle-celled sarcoma was removed lived for five months. Only one patient, in whose case a cyst was evacuated, is now alive and well two years after the operation. Twelve cases of tumor of the cerebellopontine angle were operated upon. In one case the tumor was removed at a single operation, the patient dying soon after. In 11 cases a two-stage operation was decided upon; of these two patients died after the first stage, five died soon after the second operation, while four patients are alive at periods of from twelve months to two and a half years later. Two of these patients are quite fit for their ordinary work, one is able to do a certain amount of work, while one patient feels perfectly well excepting for the loss of vision, which preceded the operation.

These figures illustrate the gravity of operation for the removal of an intracranial tumor and the small percentage of cures. Oppenheim's experience (Beitr. z. Diagnostik u. Ther. d. Geschwülste im Bereich d. Zentr. Nervensystems, Berlin, 1907) is interesting in this connection. Up to 1902 he had submitted 24 cases to operation, only one of which was cured. Among 24 cases met with from 1903 to 1907, in which he had advised operation in the hope of removing a growth, three cases were cured; six were improved, a part of the tumor or a cyst in its substance being evacuated; while in 55 per cent death occurred immediately or soon after the operation. The conclusion arrived at by Oppenheim from his own material was that of every nine or ten carefully selected cases, in only one is complete removal and recovery to be expected.

Horsley's statistics are especially instructive from the point of recurrence. Reviewing his experience at the National Hospital during the twenty years preceding 1906, he stated that he had successfully removed a tumor in 55 cases; that among 19 cases of glioma and four of sarcoma there had been a recurrence in 20 within two years; that of eight endotheliomata one had recurred three years later and seven were alive, the longest five years after operation; that of four tu-

berculous tumors, two died within three months of tuberculous meningitis, while two were alive and well, one of these seven years after operation; that among 20 cases which comprised gummata, fibromyomata, cysts, adenomata, and adenosarcomata there had been but one recurrence.

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Henschen (Ueb. Geschwülste d. hinter Schädelgrube, Jena, 1910) in a recent monograph reports 42 cases of tumors of the cerebellopontine angle submitted to operation which he had collected from literature. In eight of these the tumor was removed with subsequent recovery.

The relative frequency of cysts in different situations is a question of importance. Williamson (Rev. Neurol. and Psych., 1910, p. 143) has collected the literature of cerebellar cysts. After allowing for cystic tumors he concludes that at least 1 in 20 of the cases in which the symptoms are those of cerebellar tumor the actual lesion is a simple cyst. Among 19 cases of cerebellar cyst, excluding parasitic cysts, in which operation was performed, in all the result was recovery at least temporarily.

Fedor Krause in the second volume of his magnificent work (Chirurgie d. Gehirns u. Rückenmarks, Berlin, 1911, p. 571) summarizes his results in a few paragraphs. He has operated upon 109 cases in all. In 19 of these the tumor was removed at the first operation; 18 of the remaining 90 died after the first operation before the dura mater was opened. The mortality in the cases in which the operation was completed at one stage was 66 2-3 per cent, while in the 72 cases in which the tumor was removed at a second operation it was 20.85 per cent. These figures evidently relate to immediate recovery from operation. Krause gives no statistics in relation to recurrence. In his experience the mortality has been heaviest in the case of tumors in the cerebellopontine angle, for of 24 cases operated upon only four were cured.

Cushing's experience (Modern Medicine, ed. Osler, vol. vii, p. 457) is encouraging. He states that "in a series of 63 cases observed during the past ten months, all sub-

jected to operation, there have been eight operative deaths; marked palliative improvement in 30 cases; no improvement in 10 cases; extirpation of a tumor or evacuation of a cyst with recovery in 15 cases, making 24 per cent of supposed permanent cures." He further states: "In our series there have been eight operative deaths, or 11 per cent, and this does not allow for the fact that there have been over 80 operations in these 63 cases, the last and fatal ones often being terminal procedures on patients after a long period of improvement following decompression."

#### OCCIPITOPOSTERIOR POSITIONS.

VALTORTA (Annali di ostetricia e ginecologia, 1912, ann. xxxiv, pp. 209-336) on the basis of clinical material consisting of upwards of 3000 cases of labor in which the vertex presented, and 674 of these in which the head lay in an occipitoposterior position, draws certain conclusions which are of value. He states that the frequency of R.O.P. is 22 per cent; that of the L.O.P. 1 per cent of all vertex labors. In regard to etiology he notes that the posterior position is occupied by moderately or welldeveloped fetuses exhibiting fairly equal cephalic diameters and posteriorly enlarged heads and less projecting occiputs, the bodies being short with relatively long anteroposterior thoracic diameter. is a tendency of the head to lose its flexion. Among the causes of occipitoposterior positions are small fetus, small head, prolapsed hand, uterine obliquity, low placental insertion, hydramnios, and oligohydramnios. On examination the uterine fundus lies high and is anteriorly prominent. The round ligament is most tense on the side the occiput is placed, and the anterior shoulder can usually be felt. Examination for dilatation, which is usually slow, enables the accoucheur to feel the four-sided anterior fontanel and that the anterior lip of the cervix is swollen. In the cases in which labor does not occur spontaneously internal rotation may be obtained by placing the patient on the side where the anterior fontanel is lying. Intervention is indicated only when the occiput refuses to rotate. It should take the form of increasing head flexion by pressing the forehead up. Forceps are usually indicated. The prognosis is usually good, laceration, according to Valtorta, being rare.

### THE END RESULTS IN SIXTY-THREE CASES OF BRAIN TUMOR.

WILLIAM J. TAYLOR (Annals of Surgery, July, 1912) records six cases of tumors of the dura. Of these three died within a few hours of hemorrhage. Of the survivors one lived for nearly twenty years; the second died of recurrence of endothelioma in 108 days; the third was reported five months after operation as improved, but subsequently could not be traced. Dural tumors are particularly prone to bleed. This is due to the nature of the growth, which is almost always an endothelioma. All the vessels are engorged, the smaller ones dilated, and the bleeding is general over the dural surface. Patients may die from venous bleeding, which does not at the time appear to be very great.

There were eight simple cysts of the brain substance—four of these were cerebral and four were cerebellar. Six recovered from the operation of simple drainage and one has remained comfortable for five and a half years, although the cyst had to be drained a second time. In addition to the simple cysts, there were three cases of cystic degeneration of a distinct new growth. One was a broken-down gumma; a second, cystic degeneration of a sarcoma of the cerebellum; and the third, a cyst with thick walls which was dissected out completely. The latter was believed to have undergone sarcomatous degeneration, but the patient lived for six years in apparently good health. There was a recurrence, and death followed the second operation.

The total number of cases reported is 63. In 33 the tumor could not be found at operation, and a decompression gave more or less relief to the patient. In 30 cases the

tumor was found and removed at operation. In 14 of these the new growth was completely gotten away. In nine the growth was only removed in part, owing to its infiltrating character. In eight, cysts were found and drained.

The operative mortality is high. The patients died within the first five days, and four of these within the first twenty-four hours when the skull had been opened and no tumor found. Thirteen died within ten days of the operation, of those in which a tumor was found and removed; eight died within thirty-six hours, one from chloroform. One case of cerebellar cyst died in five days, as a direct result of operation. Nineteen deaths within ten days in 63 cases is a high mortality rate (30 per cent).

As to final result, one case of cyst of the cerebellum is alive and well five and a half years from the date of the first operation and three years from the date of the second operation of draining the cyst.

One case of glioma of the brain is living and comparatively comfortable, three years since the first operation and eighteen months since the second operation. This patient has a recurrence of his growth and must soon go. Three others are still living, but three years have not passed since they were operated upon.

Taylor states that he believes the time has come to give a plain statement of facts in regard to the end results. Such a statement is of great value coming from one who has had an experience now covering a period practically of twenty-five years. It is true that often there are brilliant cures, and this justifies an effort in nearly all cases. Moreover, the possibility of several years of life being made comfortable, and in some instances extremely useful, may well be striven for. The dangers of operation, while very great, do not offset the benefits which may be obtained. The operation of decompression as now practiced is one of such simplicity and safety that in the absence of accurate localization it should always be advised. In the past few years every case but one of simple decompression for pressure has made a good surgical recovery. This one was decompressed in the temporal region when it should have been done over the cerebellum. The error was pardonable, as the autopsy showed acute dilatation of the lateral ventricles, producing great pressure and total palsy of every nerve passing through the great sphenoidal fissure.

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#### PROSTATECTOMY.

VAN HOOK (Surgery, Gynecology and Obstetrics, June, 1912) announces as fundamental principles for his operation a clear conception that the object is the removal of obstruction to the neck of the bladder and not the removal of a definite anatomical structure. The tissues involved can all be recognized by the sense of touch; the hypertrophic part of the prostate can in the majority of cases be removed by a process of enucleation, and where this cannot be effected, the instrument of Guyon can be made use of to excise the masses which are in the way. Though hemorrhage from torn veins is profuse, it can be stopped at any moment by pressure (gauze packing). The lithotomy position is used and a grooved staff introduced into the bladder.

The short incision, one inch to one and a half inches long, made transversely and three-quarters of an inch in front of the anus, divides the centrum tendineum of the perineum. This principle is that of Zuckerkandl, who many years ago pointed out how the tissues of the pelvic outlet fall apart and normally open up toward the prostate and base of the bladder when this key to the mechanism of the outlet is touched.

When the wound made in this way heals by scar formation and contraction, the centrum tendineum is drawn together and the function of the musculature and fascial parts is entirely restored. This first incision involves no blood-vessels of any magnitude whatever, and is made in a few seconds by one or two cuts with a small knife.

The centrum tendineum having been divided, the finger can be passed back of the urethra into the loose areolar tissue that surrounds the membranous part of the tube. There need be no hesitation or doubt about this manipulation, since the urethra can be felt distended by the sound.

It is now a simple matter to make a longitudinal slit in the urethra along the grooved sound, the knife being guided by the finger. A grooved director is next passed along the urethra through the groove in the staff until the discharge of urine shows that the bladder has been entered. Then the sound can be withdrawn and the left index-finger can be passed into the bladder along the grooved. director. It is of prime importance to examine the bladder with the finger. An assistant at the patient's left side introduces. the fist into the pelvis from above, and in this way pushes down the bladder and prostate gland. Any excess of urine in the bladder is allowed to escape along the grooved director. The operator can easily feel all parts of the interior of the bladder, can ascertain the smoothness or roughness. of its surface, can determine whether or not it is trabeculated, and especially can make out whether or not there are stones present. The size and shape of the prostate are determined in an instant, and the operator decides where he must extract the largest amounts of hypertrophied material in order that the base and neck of the bladder may be restored to such mechanical relations as will make it possible for the organ to empty itself easily and completely.

The next manipulation consists in the opening of the prostatic capsule, which is usually effected by simple pressure of the finger. But if this does not suffice, a knifecan be carried along the finger and a littleopening made, sufficient to introduce the finger-tip. Then a mass is extracted from the prostate corresponding with the mechanical requirements. Sometimes this mass is removable with a single manipulation, but in the main the operator digs away patiently with the finger-tip until a mass. of tissue has been loosened. This mass is then seized with the double tenaculum forceps under guidance of the finger. This process is repeated often enough to reduce

the size of the prostate sufficiently to give a good outlet to the bladder. The operator can reestimate the situation at any time by introducing the finger into the bladder.

The same manipulation is carried out on the opposite side.

If a so-called median lobe is present it may be removed by dissecting out the prostatic mass from beneath the mucous membrane.

One of the great beauties of this technique lies in the fact that when the masses of the prostate have been removed the operation is over. Since the tissues have been opened along normal lines of cleavage, all will fall together again and will heal in their proper relations to one another under the natural pressure of the parts. sutures are required except the one to hold the tube in the bladder. On each side of the neck of the bladder a large piece of gauze is introduced and packed tightly into position to prevent hemorrhage from lacerated veins. A one-half-inch tube is introduced into the bladder and strongly sutured with silkworm-gut to the skin at the edge of the wound, and three knots are used to fasten it.

Plenty of time will be given to each of the manipulations in doing this operation, and yet not more than from four to twenty minutes will be consumed in the entire work, since the manipulations are reduced to the lowest possible requirements. There is no extensive wound to be closed, there are no blood-vessels to be tied, and there are no deep stitches to cause trouble or subsequently to slough out. Hemorrhage is minimized by keeping the finger pressed in the wound as much as possible during the operation.

The after-treatment of these cases is simple in the extreme. All of the skin within a foot or more of the wound must be heavily coated with a stiff ointment of zinc oxide. The tube may be made to discharge into a bottle, but no drainage-tube is to be fastened into it, lest the pressure of urine gathering in the bladder cause damage to it or to the kidneys. In the case of old men whose kidneys are damaged such a back

pressure might lead to uremia. Morphine may be used to control pain, though not as a rule needed. It is better to use it than to permit suffering. Pain can be caused by the tube being introduced too far into the bladder, pressing upon the upper wall of the organ. The remedy for such a pain is to shorten the tube.

A most important point is the passage of large sounds, which is begun at the end of about two weeks after the operation. The first passing of the sound may be done under gas or cocaine. It is important that at the operation the external meatus be made large enough to admit such sounds as are required.

Sounds may be passed at intervals of two weeks, as long as there is any indication of obstruction. No operation can be performed involving the tissues about the prostatic urethra that does not make it possible to have scar contractions that are more or less undesirable. Hence the passage of the sounds is a necessity.

### THE OPERATIVE TREATMENT OF INTRACTABLE CARDIOSPASM.

WILLY MEYER (American Journal of Surgery, June, 1912) states that the average case of cardiospasm yields to mechanical stretching of the cardia. This can be done through the stomach or through the mouth.

The late v. Mikulicz was the first to incise the stomach, introduce a long forceps through the cardia from below and spread its branches in various directions. Five patients thus treated were cured and remained so during the time of observation; one, who developed a perigastric abscess, was much improved.

In more recent years the well-known cardiodilator of Einhorn, which is passed by way of the mouth, and which has greatly simplified the procedure practiced by v. Mikulicz, has been successfully used in the majority of cases.

However, not all cases of this type will yield to simple stretching. In spite of re-

peated divulsion the spasm returns. Then, too, we occasionally see inveterate cases, which cannot thus be cured.

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Two different types of operative procedure are at our disposal: First, esophagoplication and vagolysis with the help of thoracotomy, without attacking the cardia itself; and secondly, cardioplasty. case reported the thorax was opened under positive pressure and a large precardiac pouch found, as diagnosed. Both pneumogastric nerves were thoroughly separated from the esophagus, and the tiny fibers entering the same were thereby torn. Then two longitudinal double folds of the pouch. several inches long, were raised and stitched together with interrupted silk sutures, the same as is done in gastroplication; the esophagus was then dropped back into its bed and the thorax was closed. Not long after the operation the ability to swallow any kind of food, liquid as well as solid, returned spontaneously.

Two months later the patient contracted a severe attack of influenza-pneumonia, shortly after which a place in the thoracotomy scar softened and had to be incised, giving exit on and off to a small quantity of the food swallowed by the patient. A thoracic esophageal fistula became established. Evidently one or more of the silk sutures in the esophageal wall had caused a perforation. Swallowing meanwhile continued with perfect ease. The patient refusing further operation, better drainage could not be provided for; irregular, septic fever set in, and she died of posterior suppurative mediastinitis twelve months after the intrathoracic operation. Autopsy corroborated the diagnosis. In a second reported case there was no return of function.

The cardia can be approached for operation by two routes: (1) from below, by way of the peritoneal cavity; (2) from above, transthoracically.

The abdominal route was selected by Wendel, of Magdeburg, in 1909, for the first time. He performed osteoplastic resection of the costal arch, following this by a plastic operation on the cardia, adopting the technique of pyloroplasty by the Heineke-Mikulicz method.

The case was that of a female, forty-six years of age; difficulty in deglutition for six years. Oblique incision parallel with costal arch; resection of seventh costal cartilage; division of sixth in its middle; arch raised; cardia well reached, corresponding to size of stout finger; constricted portion 4 centimeters long; no signs of inflammatory process. Double ligation and division of artery which crosses the cardia in transverse direction. On pulling downward, lower part of esophagus became visible; it was greatly distended. Esophagus lifted on piece of twisted gauze and therewith closed; large clamp compressed stomach below cardia; careful tamponade. Longitudinal incision from lowest end of esophagus through cardia down to stomach, wound pulled in transverse direction by two small sharp hooks and then closed by sutures arranged in double row; there was no muscular hyperplasia. The picture corresponded to an annular spastic contraction of the intestine. Diaphragm stitched on to the new-formed cardia and the whole field of operation covered by a transversely running fold of the stomach, which was stitched up all around to the serosa of the diaphragm. Addition of gastric fistula according to the Frank-Sabanajew method. Closure of abdominal wound with temporary drainage. Rapid and permanent recovery. One year later patient had gained over 50 pounds, swallowed food without obstruction, and was able to work. This is the only operation of its kind reported in recent literature. Technically, it appears rather difficult.

There is no record of the transthoracic route having been employed upon the human subject. In dogs it has given excellent results. In dogs the cardia is tightly surrounded by the diaphragm in the foramen esophageum, in contradistinction to its very loose connection in the human being. In fact, in the latter it is so loosely connected that the cardia can be drawn from above into the thoracic cavity just as far (1½ to

2 inches), without opening the peritoneal sac, as it can be drawn downward into the abdomen, without entering the pleural cavity. This anatomical condition renders operation upon the cardia in man simpler than in dogs. In the latter we have to bluntly enter the peritoneal cavity with the forceps, loosen the cardia and pull it up sufficiently to be able to do good work. The variations of cardioplasty through the thorax, according to the Heineke-Mikulicz method of pyloroplasty as practiced in dogs, are as follows, gauze tampons having been properly placed to protect the peritoneal and pleural cavities:

- (a) Longitudinal incision of cardia, stretching the wound in transverse direction; typical two-row closure as in gastro-enterostomy. Free transplantation of a piece of fascia (König) of the rectus muscle which surrounds the field of operation like a cuff; proper fixation of this cuff with a few interrupted sutures. Closure of thorax.
- (b) Same as before, but instead of the transplantation of a piece of fascia, a broad fold of stomach is stitched up to cover line of esophageal suture.
- (c) Same as under (a), again without fascia transplantation, peritoneal cavity widely opened; diaphragm stitched up to esophagus in order to place suture line in esophagus intraperitoneally.
- (d) Same as in (b), also without fascia transplantation; diaphragm stitched to stomach, leaving operating field intrathoracically. Every dog of this series made an uninterrupted recovery.

On account of the extreme thinness of the human esophagus the author would in the ordinary case surely add a free fascia transplantation, according to König, in order to protect the suture line. If inadvertently the peritoneal cavity should be opened on pulling the cardia up, which, however, is not likely to occur, he would prefer to stitch the diaphragm on to the stomach, the wall of which will well stand the continuous unrest of the diaphragm. Immediate drainage of the pleural cavity

should be added and the patient kept under continued differential pressure for the first fifteen to twenty hours, according to the method used at the German Hospital, or with Tiegel's drain.

In view of what has been stated, it seems that the future bids fair to corroborate the assumption that, in the light of modern surgery, there still-seems to be a chance of improvement or cure even for patients afflicted with supposedly intractable and long-standing cardiospasm.

### INTRACANALICULAR PAPILLOMA OF THE BREAST.

ERDMANN (American Journal of Surgery, June, 1912) thus treats of a tumor, variously named papillary cystadenoma, papillary cystoma, villous papilloma, duct papilloma, duct cancer, etc. The growth is usually located near the nipple and its areola, is small, conical, cylindrical, or spherical in shape, unattached to the skin, without nipple retraction. The tumor is usually single, unilateral, painless, smooth to the palpating finger, relatively movable, giving a sense of resilience, not hard, nor fluctuating. The dominant symptom is a discharge from the nipple, at first staining pale yellow that portion of the garment lying immediately over it. The color later becomes chocolate-brown. In the early stages the tumor often cannot be felt. The discharge is pathognomonic. Trauma and childbearing have not been proven factors in its development. The growth, at first always benign, has a tendency to become malignant, Greenough and Simmons reporting 14 per cent of cancerous infiltrations in the pedicles, while Bloodgood claims 50 per cent. In view of the tendency toward malignancy the surgical indications are perfectly clear.

The treatment is purely surgical. In the smaller growths, excision is made either by a linear dissection radiating from the nipple outward or by Warren's plastic method. If the growth be large the removal of the breast is imperative.

### REVIEWS.

ELEMENTS OF PRACTICAL MEDICINE. By Alfred H. Carter, M.D., M.Sc. Tenth Edition. H. K. Lewis, London, 1912. Price 9 shillings.

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This book, which is a good deal larger than the ordinary quiz compend and a good deal smaller than the ordinary book on the practice of medicine, has been sufficiently successful to reach its tenth edition, and therefore may be said to have passed beyond the realm of the reviewer or critic. We notice that certain of the acute infectious diseases, such, for example, as croupous pneumonia, are still classed amongst diseases of the lungs. On the other hand, the author is sufficiently modern to state that hemoglobinuric fever is a specific disease which only occurs in those who have previously suffered from malaria, but its precise nature is uncertain. He takes issue with those who think that quinine may be given in its presence. In order to save space maladies which are not frequently met with, as, for example, dengue, hemoglobinuric fever, anthrax, and malta fever, are described in small type. At the close of the volume there are a number of pages devoted to formulas which the author has found useful in various conditions, and this doubtless will prove most useful to the medical novice. That the book will be largely used in America is doubtful because of its competition. We see no reason, however, for believing that its great popularity in England will not continue.

PHARMACOLOGY AND THERAPEUTICS. For Students and Practitioners of Medicine. By Horatio C. Wood, Jr., M.D. The J. B. Lippincott Co., Philadelphia, 1912. Price \$4.00.

Many thousand medical practitioners have followed the teaching of Horatio C. Wood, Sr., in therapeutics during many years. More recently they have followed not only the teachings of the father but of the son, who have been associated together in the last editions of the father's book. Now the son presents by himself a book which in some respects resembles the older one, and which is designed to group together in a useful way pharmacological

facts and those which are generally accepted in clinical therapeutics. We are glad to notice that Houghton's work upon cannabis indica receives recognition, and are interested to see that acetanilide and similar drugs are classed under Analgesics instead of Antipyretics, which is, after all, the correct classification in view of the fact that they are used as pain-relieving preparations so much more frequently than for antipyresis. Curiously enough, under ipecac, there does not seem to be any text devoted to its therapeutics, which is the more noteworthy in view of the importance of this drug in the treatment of amebic dysentery. In the article upon the therapeutic employment of digitalis there is scarcely sufficient detail given as to its uses in the various forms of cardiac disease. It is evident, therefore, that the book can scarcely be considered an exhaustive one in the field which it is designed to fill. As a brief summary of many valuable pharmacological and therapeutic points it will undoubtedly prove useful to students in general, and particularly to those who have the privilege of listening to the lectures of its author.

A Text-book of Practical Therapeutics. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc. Fourteenth Edition, Enlarged, Thoroughly Revised, and Largely Rewritten. Illustrated. Lea & Febiger, Philadelphia and New York, 1912. Price \$4.00.

The preface in the Fourteenth Edition to this book describes its objects and scope as follows:

"The appearance of the fourteenth edition of this book, less than twenty-two years after the first edition was published, affords the author an opportunity of expressing his appreciation of the fact that medical men have found the text useful through all these years. At the time the first edition was written the treatment of disease was far more empirical than it is to-day, and although there were many books on this subject, they dealt largely with the dry facts of materia medica on the one hand,

or, on the other, presented the results of laboratory investigation in such a way that the ordinary reader could see with difficulty any relationship between the clinical and so-called scientific portions of the text! The author's effort has been to link these facts together, pointing out how many measures resorted to by custom had a scientific basis, by this means increasing the interest of the clinician in investigations which otherwise seemed of little practical value. The author has also recognized the fact that the medical profession possesses a rich inheritance of therapeutic procedure for which as yet no scientifically accurate explanation can be found, but which, nevertheless, aids materially in the practical and successful treatment of those who are ill. and he has unhesitatingly presented these measures whenever they have proved valuable. Lastly, the author recognized the fact, not only when preparing the first edition, but in the preparation of each subsequent edition, and particularly in writing this edition, that the physician at the bedside needs and desires all the help he can get, whether it comes from laboratory experiment or from bedside experience, and, furthermore, wants this help in a form in which he can use it when face to face with problems which are of vital importance to him and to his patients. He not only wants to know what drugs can do good and how they do good, but he wants also to know how to use them so they will do good.

"In the present edition all the text has been thoroughly revised and much new matter introduced in an endeavor to include all that is valuable in the methods of employing both old and new remedies. A new introductory chapter has been prepared, and text dealing with the use of salvarsan, tuberculin, and vaccine therapy has been introduced, along with a description of Bier's method of treatment by artificial hyperemia. The new ideas in regard to the employment of cardiac stimulants, as, for example, the use of digitalis in connection with lesions of the bundle of His, are also taken up.

"As in previous editions, Part I deals

with introductory matter; Part II, with the action of drugs; Part III, with remedial measures other than drugs; and Part IV, with the treatment of individual diseases, whereby the employment of the remedies discussed in the earlier part of the book is directly applied, as at the bedside. These parts are linked together by copious cross-references in the text.

"Three of the author's friends, who contributed text to the first edition dealing with the treatment of certain special subjects, have once more placed him and his readers in the position of being debtors. In the present edition the articles dealing with the treatment of diseases of the eye have been revised by Dr. George E. de Schweinitz, Professor of Ophthalmology in the University of Pennsylvania; those dealing with antiseptics, gonorrhea, and syphilis, by Dr. Edward Martin, Professor of Surgery in the University of Pennsylvania; and those upon diseases of the puerperal state, by Barton C. Hirst, Professor of Obstetrics in the same institution. The text, therefore, represents the views held by these clinicians and the author after nearly thirty years of constant experience as medical teachers and active practitioners."

THE PRINCIPLES OF HUMAN PHYSIOLOGY. By Ernest H. Starling, M.D., F.R.C.P., F.R.S. Lea & Febiger, Philadelphia, 1912. Price \$5.00.

Professor Starling is well known as the leading British physiologist of to-day, and occupies with distinction the Chair of Physiology hitherto filled by Burdon Sanderson and Professor Schäfer. The present book is worthy of his reputation and of the Chair which he holds. It is not only a compendium of modern physiology, but is written in such a way as to prove of practical interest and usefulness to medical students who do not intend to devote themselves to this branch of science, but who must of necessity be familiar with the functions of the body with which they are to deal. Little attempt is made on the part of the author to produce a laboratory manual, as space does not permit a full description of many experimental methods. The volume is of more than 1400 pages, the very numerous illustrations are excellent, and he who peruses its pages feels that the last word in the known and well-established facts of physiology is placed before him. The sequence of the chapters is that which is commonly found in complete books of this character. Naturally the chapter which is of the greatest interest to the general practitioner is that which deals with the circulatory system, with especial reference to the physiology of the heart. A most excellent cut showing the distribution of His's bundle is given, as is also one illustrating the distribution of potential differences due to electrical variations in the beating heart, and the use of the electrocardiograph. Starling's Physiology to-day will be to the medical profession what Landois's Physiology was twenty-five years ago.

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ELECTRICITY AND GYNECOLOGY. Second Edition. By May Cushman Rice, M.D. Illustrated. L. I. Laing & Co., Chicago, 1912.

We fear that the average medical man, and particularly the average gynecologist, has little confidence in the therapeutic value of electricity in the treatment of the diseases and disorders of women. This little book is designed to overcome such a lack of confidence. The first chapter discusses the general characteristics of the various currents; the second, practical points in applying electric currents; and the remaining chapters deal with the various disorders of women which the author believes can be remedied by this agent. However valuable electricity may be as a tonic agent, we doubt if it has a field of usefulness in lacerations of the cervix, in displacements, and in the various neoplasms, or, for that matter, in stricture of the rectum. As the book covers less than 150 pages of text it is manifest that it does not attempt to be very exhaustive.

A Treatise on Diseases of the Hair. By George Thomas Jackson, M.D., and Charles Wood Mc-Murtry, M.D. Illustrated. Lea & Febiger, Philadelphia, 1912.

It will probably surprise many of our readers that the authors have been able to produce a book which makes 400 pages upon this subject. Nevertheless it may be

well to state that there is no space wasted. The subject dealt with is one which is of interest to every physician in general practice, since not rarely patients are more worried about a lack of hair, or too much of it, than they are about diseases which more seriously impair their usefulness. After some general considerations upon the anatomy, physiology, and hygiene of the hair, the individual diseases of the hair are taken up and discussed in chapters which make up over 100 pages. Following this there are chapters upon the inflammatory diseases of the hair follicles, parasitic diseases of the hair, and diseases of the hair secondary to diseases of the skin.

X-RAY DIAGNOSIS IN TREATMENT. A Text-book for General Practitioners and Students. By W. J. S. Bythell, B.A., M.D., and A. E. Barkley, M.D., M.R.C.S. The Oxford University Press, New York, 1912.

Recognizing the fact that a radiologist is no longer regarded as only an x-ray photographer, the authors have prepared this volume, protesting further that the x-ray should not be used therapeutically except The volume consists of by medical men. ten chapters, with an appendix which is devoted to x-ray apparatus and technique. The first chapter deals with x-rays and their use in medicine, and then follow other chapters upon their use in the diagnosis of injuries of the bones and joints in adults and children, in the detection of foreign bodies, in examination of the thorax and abdomen and of the urinary system. last chapter deals with x-ray practice. The book is copiously illustrated with x-ray pictures and admirably fulfils the function for which it is designed.

A MANUAL OF CHEMISTRY FOR STUDENTS OF MEDI-CINE, PHARMACY, AND DENTISTRY. By W. Simon, Ph.D., M.D., and Daniel Base, Ph.D. Tenth Edition, Thoroughly Revised. Illustrated. Lea & Febiger, Philadelphia, 1912.

Simon's Manual of Chemistry has long been known as one of the standard textbooks in Medicine, Pharmacy, and Dentistry, and the tenth edition will, without doubt, maintain its repute. A large amount of new material has been added and a new chapter on solution has been introduced in

which the solution of gases, freezing points, boiling points, and osmotic pressure are considered. There is also a new chapter on the theory of electrolytic dissociation, and the section on physiological chemistry has been rewritten and brought in line with present-day knowledge and theory. entire arrangement of the book is such as to start out with elementary facts and then proceed step by step until the student is brought into the realms of more advanced chemistry. The clearness of its diction, the practical nature of its arrangement, and the fact that the student is led step by step from one task to another are doubtless largely responsible for its popularity. The numerous colored plates are excellent and do much to increase the value of the volume.

FIRST-YEAR NURSING. By Minnie Goodnow, R.N. Illustrated. The W. B. Saunders Co., Philadelphia, 1912. Price \$1.50.

The author of this book has had ample experience in the training of nurses, and has taken much for her pages from the books of other trained nurses who have contributed to the literature of nursing. The best parts of the volume are the illustrations taken from other books as to the methods of handling patients and taking care of the bed and bedding. The book is a good one as far as it goes, but we cannot see that it fills a function which is not already well filled by other volumes.

THE PRACTITIONERS' ENCYCLOPEDIA OF MEDICINE AND SURGERY IN ALL THEIR BRANCHES. Edited by J. K. Murphy, M.C., F.R.C.S. The Oxford University Press, New York and London, 1912.

Older members of the profession doubtless still have on their shelves a very excellent encyclopedia of medicine and surgery edited by Quain. This book has a larger page, and contains about the same kind and quality of information. It is not arranged alphabetically, but starts out first with general medicine in its various departments, as, for example, the infectious diseases, the circulatory diseases, etc., and then passes on to diseases of children, to life insurance problems, clinical pathology, medicolegal matters, and mental disorders. Part II is devoted to surgery, and deals first with anesthetics, then with hospital construction and general surgery. Part III deals with obstetrics. Part IV is devoted to diseases of the eye and ear, throat and skin. Part V deals with special forms of treatment. Each article is written by an English physician or surgeon who is supposed to be, and nearly always is, well known for his work along these lines. The type is large, the paper good, and the book can be most heartily recommended to those who wish to possess in one volume a fairly complete summary of medical and surgical practice as it exists to-day.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by L. F. Appleman, M.D. Volume III, September, 1912. Lea & Febiger, Philadelphia, 1912.

The present volume, as in its preceding September issues, contains an exhaustive summary of the advances and records made in diseases of the thorax and its viscera by Dr. William Ewart, of London; in Dermatology and Syphilis by Dr. William S. Gottheil, of New York; in Obstetrics by Dr. Edward P. Davis, of Philadelphia; and in diseases of the nervous system by Dr. William G. Spiller, of Philadelphia. It will be recalled that the object of Progressive Medicine is to present a history to the busy practitioner of medicine as it exists at the present moment and to cull for him, with criticisms on the part of the authors, all that is good in medical literature during the last twelve months.

THE PITUITARY BODY AND ITS DISORDERS. BY Harvey Cushing, M.D. The J. B. Lippincott Co., Philadelphia, 1912. Price \$4.00.

Dr. Cushing is so facile princeps in this department of medical research and surgery that he is, as a matter of course, regarded as a chief authority in the world upon diseases of this important gland. The present volume is an expansion of the Harvey lecture which he delivered in September, 1910. It is at once experimental and pathological. A very large part of the book is also given up to a consideration of the surgical procedures which are to be directed

against disease of this organ. To those who are especially interested in brain surgery the book is indispensable, as it is also to those who are interested in disease of the pituitary body as it is met with in clinical medicine. Further investigation will almost certainly prove that a much larger number of patients suffer from a disease of this gland than has heretofore been thought.

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Insomnia: Its Causes and Treatment. By Sir James Sawyer. Second Edition. Cornish Brothers, Birmingham, 1912.

Whether there is room for a special monograph upon this subject is a question which can be determined by our readers as well as by ourselves. That the treatment of insomnia is often one of the most difficult of tasks cannot be doubted. In the pages of this little book many useful hints are given. It is not, however, in the slightest degree scientific in its discussion of the matter, is not thorough enough for the physician, and is not suitable for any member of the laity who suffers from this annoying condition.

THE PRACTICE OF MEDICINE. A Manual for Students and Practitioners. By Hughes Dayton, M.D. Second Edition, Revised and Enlarged. Lea & Febiger, Philadelphia, 1912.

This little book belongs to the so-called "Medical Epitome Series" and covers a little over three hundred pages. In other words, it belongs to that class of volumes which have popularly been called in the past quiz compends. The author seems to have been very successful in condensing a large amount of information into a small space. For the purpose of refreshing his memory the student may use it with safety, but it cannot be employed in place of one of the regular text-books.

THE PRINCIPLES OF HYGIENE. A Practical Manual for Students, Physicians, and Health Officers. By H. D. Bergey, A.M. Illustrated. Fourth Edition, Thoroughly Revised. The W. B. Saunders Co., Philadelphia, 1911. Price \$3.00.

When we consider that four editions of Dr. Bergey's book have been called for in the space of eleven years, it is manifest that it has filled a distinct want in medical literature. Dr. Bergey has for nearly thirty years been devoting himself to this subject, and while still a comparatively young man brings to his work a large experience in laboratory practice and in general hygiene as well. In the present edition special emphasis is laid upon the great advances which have been made in the prevention of disease, notably typhoid fever and dysentery, and the subjects of water and sewage purification.

Les Produits Biologiques Mediciaux. By Drs. P. Byla and R. Delaunay. F. Gittler, Publisher, Paris, 1912.

This is a timely volume devoted to the consideration of biological products used in medicine. It opens with a general consideration of the ferments, and then passes to a consideration of the various glandular substances which are now so commonly employed in medicine. It is probable that in regard to some of these products the authors are overenthusiastic, but the profession is in need of a general summary of our knowledge along these lines, and it will find such a summary in these pages. So far as we know there is no English translation to this volume, but those who read French will find much in it which will interest them and give them an increased knowledge of this important subject.

BACTERIOLOGY AND PATHOLOGY FOR NURSES. By J. G. Roberts, M.D. Illustrated. The W. B. Saunders Co., Philadelphia, 1912. Price \$1.25.

That the average trained nurse should have some idea of the facts of bacteriology goes without saying. That it is necessary for her to have any amount of full information concerning this subject, or of pathology, is questionable. This little book is practically a primer dealing with these subjects, and the portion devoted to pathology is so brief as to merely skim the subject. If in training schools for nurses a real attempt is made to give a course on these subjects this book will prove inadequate. If, however, it is used for collateral reading it will prove useful.

THE EXTRA PHARMACOPCEIA OF MARTINDALE AND WESTCOTT. Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Fifteenth Edition. In Two Volumes. H. K. Lewis, London, 1912.

We have referred to the earlier editions of this most valuable little book in terms of highest praise. We venture to assert that no other book contains in such brief space so much valuable information put in so concise a form and yet in adequate quantity. In the present edition the innovation has been made of making it into two volumes, the first of which is almost four times as large as the second. In the first volume, much of

the material heretofore found in previous editions is placed, such as the chemical and therapeutic properties of extra-pharmacopæial chemicals and drugs. In the second volume directions are given for analytical and experimental work in connection with the elucidation of diseases, particularly those produced by bacteria and animal parasites. There is also a chapter on the analysis of patent and proprietary medicines which is twice as large as that in the last edition and covers four hundred pages. The price of the first volume is 14 shillings and of the second 7 shillings.

### CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The chief event of importance in the scientific world this month has been the annual meeting of the British Association at Dundee. This meeting has been one of the most successful in the annals of the Association, and the numbers attending considerably exceeded the figures of the last Dundee meeting, just forty-five years The opening address of the President, Professor Schäfer, on the origin of life, attracted wide-spread attention. Curiosity was excited and much interest was aroused in the expectation that some ray of knowledge would illuminate the darkness in which this subject is plunged. We cannot say, however, that the address carries us very much further along the path to knowledge. The Professor devoted the first part of his address to an examination of the phenomena indicative of life, but he did not exactly define how he would distinguish living from non-living matter. The fundamental mystery was thus left untouched, for until we can obtain a clear conception of the nature of life itself it is difficult to study the conditions under which it finds origin. Biologists are agreed that the higher forms of life are pro-

duced from lower forms by a process of evolution, and they carry the history back to a lump of structureless protoplasm in which no sign of special organs can be Referring to the classic experiments of Tyndall, the Professor said: "If the formation of life, of living substance, is possible at the present day—and for my own part I see no reason to doubt it—a boiled infusion of organic matter, and still less of inorganic matter, is the last place in which to look for it." Professor Schäfer appeared to think that physiology having carried us back to the protoplasm, chemistry must be called upon to explain the actual origin and formation of that proto-An eminent chemist, Professor Tilden, has replied to this claim by pointing out that though the chemist may be able in the future to produce artificially the celluloses which form the cell wall of vegetable tissues, he will still be far from the problem of associating non-living substances together and endowing them with the power of manifesting physical energy; in other words, life. It should be remembered that the Presidential address at the British Association is not delivered to a purely scientific audience.

In the section of Physiology, Professor Leonard Hill gave a most interesting address on the maintenance of health. He

declared that the ill effects of badly ventilated rooms were not caused, as commonly supposed, by chemical impurities, but by the absence of light, of movement in the atmosphere, and by the increase of temperature. Satisfied with chemical purity in the atmosphere, the public had acquiesced in the elevation of skyscrapers and of underground places of business. sun was thus cut off by the shadow of tall buildings and by smoke. He suggested that each clerk should have a fan as well as a lamp on his desk, as the efficiency of workers was much increased by a sufficient draught of cool air. Ventilating engineers should direct all their efforts toward cooling the air in crowded places and cooling the bodies of people by setting the air in motion by means of fans. The Professor said that central heating produced a monotonous windless atmosphere which was not so conducive to health and vigor as the old-fashioned open fire, which continually drew fresh cold air into the house.

The town of St. Helens has been the first to secure the detention of an infectious consumptive patient in a hospital. An act was passed in 1911 giving magistrates power to order such detention if a medical officer certified that a person was in an infective state and that proper precautions to prevent the spread of such infection could not be taken. A man suffering from tuberculosis was found living in a small house of four rooms with his wife and two children and four other adults. The magistrates ordered the patient to be retained in hospital for three months, the full period allowed under the act.

The medical officer of health in Islington has endeavored in his annual report to find a cause for the high rate of infant mortality in that district. He points out that the infant mortality-rate is not being reduced at anything like the speed of the general death-rate. An examination of the returns from the different parts of Islington showed that the high death-rate occurred in the poorer districts, the figures being twice as high in the more crowded neighborhoods as compared with the more

well-to-do parts. He ascribed this difference to the lack of education and want of knowledge of the mothers. In their anxiety to do full justice to their offspring they fed them on many injurious substances. He therefore recommended that health visitors should be appointed to pay personal visits to the homes and give practical advice to mothers how they should feed themselves as well as their children. It has been found that distribution of leaflets of an instructive character has not been of much service to the poorer mothers, as owing to their lack of education they are unable to understand simple instructions without a personal explanation.

It is curious to learn that the special treatment accorded to suffragettes in prison for political offences has given rise to considerable jealousy on the part of ordinary prisoners. The Prison Commissioners remark in their annual report that there is much dissatisfaction among the ordinary prisoners, "who are unable to appreciate what must often be a very nice distinction." The new prison or "hotel" for habitual prisoners in the Isle of Wight is now in full swing, and the Home Secretary has been advised to grant still further concessions by allowing the inmates to read magazines and newspapers and also to smoke occasionally as a reward for good conduct. Certain men who show signs of amendment are allowed considerable liberty on "parole." It is hoped by these means to facilitate their re-entry into ordinary life. It is good to hear that the number of persons sent to prison in the preceding year is the lowest on record.

The revolt of the medical profession against the Insurance Act will shortly enter upon a new stage. Next week all the practitioners who are pledged to follow the policy of the British Medical Association will send in their resignations of all appointments to Friendly Societies and Sick Clubs. According to all accounts club doctors are still unanimous in their determination not to give service under the act in its present form. The Insurance Commissioners have lately issued some regulations as to special

payments for night work, operations, etc., but they remain obstinately silent on the vexed question of offering an increased "per capita" fee. If no agreement is come to with the Commissioners the doctors will probably have to put into force their own scheme for a public medical service.

A Conference of Sanitary Inspectors seems an unlikely spot to look for a discussion of the love match as against a more mercenary and prosaic marriage. Yet Sir James Crichton Browne, in his presidential address to the inspectors, praised the love match not only from a romantic point of view but also from the eugenic standpoint. He declared that there must be a deep physiological significance in the spontaneous attraction between two persons of the same race, and that the offspring of such unions were more likely to be vigorous and healthy than those of persons who allied themselves in cold blood for sordid or mercenary motives. Sir James thought that eugenics had not got much further than a pious opinion, and that we required far more information as to the precise transmission of characters before we could venture to exercise any real control over human mating. People are greatly influenced in their habits by their environment, and the better the housing conditions of the poor, the less likely they are to rush into rash and ill-starred marriages.

#### EIWEISS MILCH.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: In response to the request of one of your subscribers for further information about "Eiweiss Milch," I wish to say that this preparation, as ordinarily referred to in the literature, is freshly made each day in the hospital or home where used, just as any other modified milk mixture would be made up each day. Its preparation (which I shall explain a little later) requires some practice and close adherence to the directions given by its originators. In some of the larger cities, where there is a Walker-Gordon laboratory, this firm puts up

Eiweiss Milch, the preparation retailing in St. Louis for thirty cents a quart.

There has lately, however, been placed on the market a so-called "Eiweiss Milch in powdered form" (made by Louis Hoos, Scientific Milk Products Co., 5232 Kenmore Ave., Chicago, Ill.), which merely requires dilution with water to produce what the manufacturer claims is the equal of the usual Eiweiss Milch. Of this product and the results obtained with it I know absolutely nothing, nor have I been able to obtain any reliable information about it from others.

Eiweiss Milch, according to the original directions of Finkelstein and Meyer, is made as follows:

To a liter of whole milk is added a tablespoonful of essence of pepsin or some similar preparation (just as in the preparation of whey), and this kept at a temperature of about 42° C. for a half-hour. By the end of this time the casein and fat will have formed a firm cake from which most of the whey (fluid part) has been pressed out. This curd is now placed in a thin linen sack and allowed to hang for one hour so that the whey drips from it. Under no circumstances is the whey to be squeezed out, instead of merely allowed to filter through the cloth, as in so doing some of the fat would be pressed through also, and lost in the whey. Now, stirring constantly, the curd is mixed with 1/2 liter of water, and with a small wooden potatomasher is rubbed through a hair sieve (it is important that a hair sieve be employed, as the ordinary sieve is not fine enough). The curd is then rubbed through the sieve a second time, and should now be so finely divided that the mixture looks like milk. To this is added a half-liter of fat-free buttermilk. The finished product is somewhat sour, like buttermilk, and on standing for some time a precipitate (the curd) forms, but on shaking up the Eiweiss Milch should look very similar to ordinary milk. Yours truly,

T. C. HEMPELMANN, M.D.

625 METROPOLITAN BLDG., St. LOUIS, Mo.

# THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE.

Whole Series, Vol. XXXVI.

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### ORIGINAL COMMUNICATIONS.

#### THE ACTION OF THE INTERNAL SECRETIONS UPON THE MILK SECRETION.

BY ISAAC OTT, M.D., Professor of Physiology;

JOHN C. SCOTT,

Lecturer upon Experimental Physiology, Medico-Chirurgical College of Philadelphia.

We¹ found that the hormones exciting the secretion of milk were those from the posterior part of the pituitary, the pineal gland, the thymus, and the corpus luteum. These experiments were confirmed by Schaefer and Mackenzie² except in the case of the thymus. They used the cat. We used the goat.

On the lactating cat we obtained no results with thymus. On the goat we then tried three different specimens of thymus, one of which was ten years old and kept in an unopened box. Every specimen produced a great increase in the secretion of milk. It is evident the cat is not so suitable for this work as the goat. Ancel and Bouin<sup>8</sup> discovered what they call a myometrial gland in the uterus of the pregnant rabbit. It exists only during the second half of gestation. In the rabbit they hold that in the course of gestation the mammary gland goes through two phases: first, a rapid development of the gland during the first half of pregnancy; second, the characteristic secretory phenomena. They hold that the phenomena of the mammary gland during the first half of pregnancy are conditioned by the corpus luteum. The secretory phenomena of the second half of gestation are caused by the appearance of a gland called the myometrial and located in the uterine muscle. Mackenzie<sup>4</sup> found that a saline extract of the uterus of a cat killed within a week of parturition was found to have a powerful galactagogue action. This secretory activity was absent from the uterus except after parturition and during lactation. These experiments might be construed as confirmatory of a myometrial gland.

That substances inhibitory of lactation exist in the blood was rendered probable by an experiment of D'Errico's. He injected into lactating bitches the defibrinated blood of pregnant bitches and found that the secretion of milk was considerably diminished. Lombroso and Bolaffio by a parabiotic procedure sutured rats together in pairs so that a vascular anastomosis was established between them. They joined a virgin female rat with one in an early stage of pregnancy, but no change took place in the mammary glands of the former as pregnancy advanced in the latter.

Morpurgo<sup>7</sup> performed a similar experiment and obtained the same result.

In the case of the Blazek twins of Prague, united by a common sacrum with a common circulation, but with separate nervous systems, the pregnancy of one was followed by enlargement of the breasts and a secretion of milk in both.

In our experiments we followed the plan used by Mackenzie to test the inhibitory action of the animal extracts upon the secretion of milk. He injected a solution of the pituitary body, noted the quantity of milk, then rested thirty minutes, when the solution of the pituitary was again injected and the quantity was found to be the same. Then he tried the same experiment, but injected a small dose of another animal extract just before the second injection of the pituitary solution by the vein. He then waited another half-hour and injected the third dose of the hypophysis. If the first and third doses produced a marked effect and the second much less, it is inferable that the animal extract is inhibitory of the pituitary activity. Mackenzie in this way found that extracts of the placenta and fetus had an inhibitory action upon the milk secretion in the cat. But Miss Lane-Claypon and Starling<sup>8</sup> have shown in the rabbit that the injection of a fetal extract enlarged the mammary gland in the rabbit and also produced milk. Foa9 and Biedl and Koenigstein<sup>10</sup> have confirmed this fact.

It has also been shown by Ancel and Bouin<sup>11</sup> that destruction of the corpora lutea in the pregnant rabbit arrests the development of the mammary gland. Bouchacourt<sup>12</sup> states that women fed with sheep's placenta had an increased secretion of milk. Basch<sup>18</sup> found that the subcutaneous injection of the placental and fetal extracts increased the milk secretion. Basch<sup>18</sup> found a placental extract produced milk in virgin animals and in children about four months old. Lederer and Pribram14 and Ott and Scott<sup>15</sup> have found that a solution of the placenta by the vein augmented the secretion of milk in the goat. We have here discordant results, perhaps due to the different animals employed.

We studied the inhibitory agents of the secretion of milk upon the goat. We found that a solution of 0.108 gramme of the ovary minus the corpus luteum rubbed up with distilled water, filtered through cotton, and injected by the vein inhibited the action of infundibulin, the pineal, thymus, and corpus luteum upon the milk secretion. If, however, orchitic extract in the same dose and prepared in the same manner like the ovary was injected, then the second dose of infundibulin was followed by a consid-

erable increase. The orchitic extract is a synergistic agent to infundibulin. We also found the pancreas, spleen, adrenalin, and iodothyrin to inhibit the secretion of milk excited by infundibulin. That this inhibitory action was not due to albumen was shown by injection just previous to the second injection of 0.108 gramme of eggalbumen, when we obtained a slight increase of secretion. With 0.018 gramme of liver and infundibulin we obtained no decrease, but a very marked increase of the secretion of milk. As several of the glands contain cholin we tried the effect of 0.00128 gramme of cholin and obtained no increase of the milk secretion.

Now as neither egg-albumen nor liver retards the action of infundibulin, we feel sure that it is not the albuminous constituents of the glandular extracts which inhibit the secretion of milk. Some of these glands contain cholin, but we have not found cholin to retard the secretion of milk. As it is neither albumen nor cholin in these extracts which inhibits the action of infundibulin, we must infer that it is the hormones in these glands which inhibit the milk secretion. Now orchitic extract is synergistic to infundibulin, and so is albumen. In this case we acidified the orchitic extract, boiled, filtered through paper, and neutralized the solution. Then we tried its effect upon the action of infundibulin. As all the other extracts contain albumen and are not synergistic to infundibulin it would be very exceptional if it was the albumen in the orchitic extract which acted synergistically. When, however, all the albumen is removed, orchitic extract still has a synergistic action upon the galactagogue properties of infundibulin. Hence, we can divide the animal extracts as regards their action upon the milk secretion into exciting, inhibitory, and synergistic:

Exciting.	Inhibitory.	STREEGISTIC.
Infundibulin, the strongest. Corpus inteum. Pineal gland. Thymus. Mammary (Mackenzie).	Ovary minus corpus luteum. Spleen. Pancreas. Adrenalin. Iodothyrin.	Orchitic extract.

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We made thirty experiments and we have appended some of them.	3.40 2 " Injection of a solution of 0.108 gramme of iodothyrin and 0.059 Cc. of infundibulin.
Experiment 1.—Goat. [The Cc. represent the quantity of milk in five minutes.] P.M.	4.05 0.6 " 4.10 4.1 " Injection of 0.059 Cc. of infundibulin.
2.00 0.11 Cc. 2.05 4.5 " Injection of a solution of 0.108 gramme of corpus luteum.	P.M. Experiment 7.—Goat. 2.00 0.5 Cc. 2.05 11 " Injection of 0.059 Cc. of infundi-
2.10 1.2 " 2.30 1.8 " 2.35 2.2 " Injection of a solution of 0.108 gramme of ovary and a solution of 0.108 gramme of corpus	bulin.  2.10 2 "  2.30 0.8 "  2.35 16 " Injection of a solution of 0.108
luteum. 2.40 0.8 " 3.00 0.7 "	gramme of dried liver.  2.40 2 "  F.M. Experiment 8.—Goat.
3.05 3 "Injection of a solution of 0.108 gramme of corpus luteum.  P.M. Experiment 2.—Goat.	1.50 0.8 Cc. 2.05 0.8 " Injection of a solution of 0.00128 gramme of cholin.
2.35 0.8 Cc. 2.40 11 " Injection of 0.059 Cc. of infundibulin.	2.10 0.9 " 2.20 0.6 " 2.25 0.5 " Injection of a solution of 0.0025
2.45 2 " 3.09 1.1 " Injection of a solution of 0.108 gramme of ovary and 0.059 Cc. of infundibulin.	2.30 0.7 " 2.35 0.7 " 2.40 0.7 "
3.45 1.2 " Injection of 0.059 Cc. of infundibulin.	2.45 0.8 "  Experiment 9.—Goat. [Orchitic extract was acidified with acetic, boiled, filtered
P.M. Experiment 3.—Goat.  2.30 0.13 Cc.  2.35 11.2 " Injection of 0.059 Cc. of infundibulin.	through paper, and was free of albumen when injected.]  P.M.  3.00 0.5 Cc.
2.40 1.3 " 3.00 1 " 3.05 5 " Injection of a solution of 0.054 gramme of pancreas and of	3.05 8.2 " Injection of 0.108 Cc. of infundibulin. 3.10 2 " 3.30 0.6 " 3.35 11.1 " Injection of a solution of 0.108
0.059 Cc. of infundibulin.  3.10 0.6 " 3.30 0.7 "  3.35 10 " Injection of a solution of 0.059	gramme of orchitic extract and 0.108 Cc. of infundibulin.
Cc. of infundibulin.  P.M. Experiment 4.—Goat.	REFERENCES.
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4.20 1 "	iv, No. 4.
P.M. Experiment 5.—Goat. 3.00 0.6 Cc. 3.05 10 " Injection of 0.059 Cc. of infundi-	5. La Pediatria, No. 4, 1910. 6. Atti della Soc. ital. di ostet. e ginec., vol. xv, 1909.
3.10 1.6 " 3.30 1.2 " 3.35 4.3 " Injection of 0.059 Cc. of a solution of adrenalin and 0.059 Cc.	7. München. med. Wochenschrift, No. 4, 1908. 8. Proceedings of Royal Society, Proc. B, vol. 1xxvii, 1906. 9. Archiv. di Fisiolog., vol. v, 1908.
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3.05 0.6 Cc. 3.10 4.5 " Injection of 0.059 Cc. of infundi- bulin.	1909, and Archiv f. Gynäkol., Band 96, H. 1. 14. Pflueger's Archiv., vol. cxxxiv, 1910. 15. Therapeutic Gazette. May, 1912.
3.15 1 " 3.35 0.6 "	CLAYPOOL BUILDING.

#### A CLINICAL STUDY OF SUMBUL.

BY DAVID I. MACHT, M.D., BALTIMORE, MD.

Sumbul or sumbul root is a medicinal substance long recognized by the United States Pharmacopœia, and by the Pharmacopœias of most Europeon countries (Sumbul Radix, B. P.; Sumbulwurzel, G.; Racine de Sumbul, F.; Sombulur, Port.), yet it is a drug of very indefinite properties. The U. S. P. itself confesses its ignorance on the subject by describing it as "the dried rhizome and roots of an unknown plant of the family Umbelliferæ!"

Under the name of Sumbul or Jatamansi a root has long been used in India, Persia, etc., as an incense (religious) and medicinally. It is found in the regions lying north of British India and east of it, as in Nepaul, Bootan, Bucharia, etc.<sup>2</sup> It found its way to Europe through Kiakta into Russia, and was first employed by physicians in Moscow and St. Petersburg. From there it was introduced into Germany in 1840, and thence into France, England, and United States. In England it was first employed by Granville. It is also imported into England directly from India. This, the original Sumbul—to use an accurate nomenclature, the Ferula Sumbul—is described by the botanist Hookerfil,8 and is somewhat different from the sumbul of commerce now generally employed, which comes to us from Asia through Moscow. Another species, Eurangium Sumbul, Kauffman, coming originally from Russian Turkestan, where it grows at an altitude of 3000 feet, has been successfully cultivated in Moscow.4

Ferula Sumbul comes on the market in transverse slices 1 to 5 inches in diameter and one or more inches thick, which consist of a dark thin bark and a light, spongy parenchyma, presenting a dirty brown surface and showing a resinous exudation. Its taste is at first feebly sweetish, but on mastication becomes bitterish and balsamic, though not disagreeable; at the same time a musky odor is noted, and a sensation of warmth in the mouth and throat is felt. Microscopically the parenchyma shows moderately numerous starch grains and

numerous large, thin-walled resin-cells. The commercial sumbul is somewhat different. It is described officially as coming "in transverse segments of variable length and rarely exceeding 10 centimeters in diameter; externally dusky brown, annulate; longitudinally wrinkled, or with a smooth silver-gray periderm; fracture short, fibrous; light-yellow or brownish-yellow, spongy, porous, with numerous brownish-yellow resin reservoirs, and irregular, easily separable fibers; bark about 0.5 mm. thick; odor strong, musk-like; taste bitter."

The root was analyzed by Reinsch (1843), and was found to contain a volatile oil, two resins (one soluble in alcohol, the other in ether), wax, gum, starch, a bitter substance soluble in water and alcohol, and an acid, named "sumbulic acid," but which Ricker and Reinsch showed to be angelic acid C<sub>5</sub>H<sub>2</sub>O<sub>2</sub> plus valeric acid C<sub>5</sub>H<sub>10</sub>O<sub>2</sub>. The odor was due to the balsamic resins and "some unknown substances." Reinsch probably worked with Ferula Sumbul.

Ph. H. Uteche examined the commercial sumbul. He macerated the root with water, treated it with sodium bicarbonate, washed it again with water, and let it dry at a temperature of 15° C. He then percolated with alcohol, and on distillation obtained a resin insoluble in ammonia, but soluble in ether, chloroform, acetone, carbon disulphide, and benzol. It undoubtedly contained a volatile oil, since it was markedly aromatic. With HCl it gave a violet, then blue color reaction.

Therapeutically sumbul has been recommended in various conditions. Its original use as a remedy in cholera and atonic dysentery and diarrhea is now rarely resorted to. In Moscow it is used for delirium tremens, and in America, too, alcoholism is one of the conditions in which it is indicated. One writer speaks of it as "an excellent nervous sedative, especially for the shakiness which follows strong liquor galore." But the chief use of this drug has been as a stimulant and antispasmodic in nervous

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exhaustion, and especially in functional nervous disorders of females, such as hysteria, neurasthenia, climacteric disturbances, etc. It is lauded as possessing marked sedative and even slight hypnotic properties. Thus J. Morgan,<sup>8</sup> in describing the effect of an overdose in a young man who took an ounce and a half of the tincture at night, says that the patient "felt confused during the next day, and worse in the afternoon, with a tendency to drowsiness and snoring." A distinct odor of the drug could be detected from his skin and his

I became interested in this drug in connection with the neuroses of the menopause, in which it is highly recommended by some observers, especially for the "hot flushes" of which women so often complain at that period of life. Having indeed observed some benefit from its use in one or two cases, I tried to make a more extensive study of the drug. Pharmacologically nothing could be well done, as no pure active principle from sumbul root has been isolated, and whatever substances have been separated were of a resinous nature. My observations were therefore entirely clinical, with the commercial product on the The official preparations of the U. S. P. are the solid and fluid extracts. I found it more convenient to order the drug in the form of a 10-per-cent tincture, administering it in doses usually of one drachm (teaspoonful) three times a day.

Through the kindness of Dr. Thomas McCrae, head of the out-patient medical department of the Johns Hopkins Hospital, I prescribed the drug to a large number of patients with very different functional nervous disturbances. I have observed in all a series of 100 cases, almost all neurasthenics, with the greatest variety of symptoms—"nervousness," headaches, indefinite pains, "lump in the throat," insomnia, gastralgia, palpitation of the heart, vertigo, "hot flushes," etc. Out of the 100 patients, 25 stated that they were more or less relieved by the drug, but the beneficial effects were not lasting, and it seemed that in most of the cases the same results could be obtained with a simple bitter such as

gentian, or by simple hygienic means without any drugs at all!

I have made special observations on the effect of sumbul in neuroses of the menopause, especially in the complaint of "hot or nervous flushes," or "Heisze Wallungen," as the Germans call them. Of such cases I have collected altogether 31, most of them being in women of forty years or over, but a few in younger patients with artificial menopause. Here indeed the effects of sumbul at first sight seemed to be a little more definite, for out of the 31 patients, 17, or over 50 per cent, stated that their symptoms were ameliorated.

The following history may be taken as illustrative of this group:

Case E 60356.—Mrs. E. E., forty-two years old, white, married.

Complaint: "Hot flushes."

Family history: Nothing remarkable. No history of tuberculosis.

Present history: No children's diseases. Patient had typhoid fever twenty years ago. She gave birth to five children, and has had three miscarriages.

Present illness: For about a year the patient has been troubled with hot flushes coming on suddenly and making her very uncomfortable. During the attacks she feels faint, and sometimes sees spots before her eyes, so that she has to lie down. She has also been nervous for the past year, complaining of sudden feelings of "anxiety," and suffers from "fulness in the stomach" and palpitation of the heart. Her periods have always been regular, coming every month and lasting three or four days. But for the last two or three months the menstruation has been irregular, coming on every two weeks and lasting a whole week at a time.

Appetite is good; bowels regular; micturition normal; no dyspnea; no swelling of the feet; no cough or expectoration.

Physical examination: Patient is well nourished, inclined to corpulency; color good; tongue clean; pupils react to light and accommodation; no edema. Chest symmetrical, well formed, slightly barrel-shaped; movements good and equal on both sides. Lungs clear throughout on percussion and

auscultation. Heart, P. m. i. in 5th i. s., in mammary line; no enlargement; sounds clear; no murmurs. Pulse, 92 per minute, regular in force and rhythm, small volume, good tension, vessel-wall not hardened. Abdomen full, distended by gas; no tenderness; no masses felt; liver and spleen not enlarged. Urine negative for albumin and sugar.

Patient was ordered one drachm of tincture of sumbul three times a day, and when seen three days later said she was better.

On following up these cases, however, I found that the improvement was only an apparent one, or at the best only ephemeral. On repeating the drug most of the cases did not seem to respond, and in some there was even gastric distress noted.

In summing up my impressions, I cannot positively, with perhaps two or three exceptions out of a hundred, attribute to sumbul any specific action in the menopause, or indeed any physiological action whatever, aside from its nasty, bitter taste. Its vaunted wonderful curative properties have certainly not been corroborated by my experiences. Perhaps they may not be due to sumbul at all, but to other drugs with which it is often combined. Thus Goodell used to prescribe a pill of sumbul with arsenic, iron, and asafetida. It is also possible that the original Ferula Sumbul of the Orient, in its fresh state, possesses more active properties. The ordinary commercial variety of sumbul on the market, however, as used in the United States, is to my mind an inert, useless, and needlessly expensive drug, which certainly does not deserve an official place in the Pharmacopæia.

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  - 1511 MADISON AVENUE.

# OF THE BLADDER INTO THE FEMORAL CANAL, WITH A REVIEW OF THE DIAGNOSTIC POINTS OF FEMORAL HERNIA AND THE REPORT OF AN INTERESTING CASE.

BY A. L. HERTEL, M.D., AND G. E. HERTEL, M.D., ST. LOUIS, MO.

Hernia of the bladder into any region until recently was thought to be a condition found only in the adult, but owing to the great number of operations now being performed on the child for the radical cure of hernia the condition has proven to exist almost as frequently in him as it has in the adult.

Carmichel reports three cases of bladder hernia in one hundred and fifty-two operations for hernia in children, forty-four of which were under the age of one year. However, in these one hundred and fiftytwo operations he has not found a single case of femoral hernia of the bladder.

B. F. Curtis in his first collection of fifty-one cases states that two-thirds (thirty-four) were of the extraperitoneal type. Of these thirty-four cases twenty-three were complicated with other herniæ.

Rarest of all is the true intraperitoneal form, only four cases being found up to as late as 1895. In his second report of fiftyfive cases, ten were of the femoral variety as to forty-five inguinal, proving that the femoral hernia involves the bladder in a greater proportion of cases than the inguinal. In his third report of fifty-seven cases he states that twenty-three were recognized as hernia of the bladder before any injury to the bladder had been done; in four cases the hernia was not seen until the bladder had been injured; in two the bladder was not seen at all during the operation, in ten it was taken for the hernial sac, in five for a tumor or cyst, in three for a thickened area in the sac wall, in three for fatty tissue, in one for degenerated omentum, and in one for haustrum of the colon.

Brunner, on the other hand, in his report of 1890 states that in one hundred and eighty cases of bladder herniæ he found the following: One hundred and thirty-six were of the inguinal variety, of which number one hundred and thirty-two were in the male; twenty-nine were of the femoral variety, of which number twenty-seven were found in the female. The remaining were not classified.

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Of the one hundred and eighty cases reported by Brunner, one hundred were of the paraperitoneal variety, eighteen were intraperitoneal, and fifteen were extraperitoneal. He, like the others, states that in only thirteen of the cases was the diagnosis made before the operation had been done. This shows the importance of an accurate diagnosis if it is possible to make one before the operation, and the need of keeping in mind the possibility of the bladder being in the hernial sac.

The diagnosis of femoral hernia cannot always be made, but in the majority of cases the swelling can be felt and often seen a little inferior and anterior to Poupart's ligament and over the inner surface of the front of the thigh.

The boundaries of the femoral canal as well as the femoral hernia, if we exclude the rarer forms, are: Inner side, the spine of the os pubis; outer side, the fascia overlying the femoral vein; floor, the continuation of the iliac fascia; roof, the falciform process of the fascia lata and Poupart's ligament.

The covering of the sac is generally made up of the skin, subcutaneous fascia, Cooper's fascia which is composed of the septum crurale, femoral sheath and cribriform fascia, the subperitoneal fat, and peritoneum.

It is not uncommon to find the sac passing upward and over Poupart's ligament toward the anterior superior spine and resting upon the aponeurosis of the external oblique muscle. It is in this condition that a diagnosis as to the variety of hernia cannot be made until the sac has been opened and the contents studied.

The conditions to be considered in the diagnosis of femoral hernia are:

Reducible femoral hernia.
Irreducible femoral hernia.
Incomplete reducible inguinal hernia.
Inguinal hernia.
Aneurism of the femoral artery.
Psoas abscess.
Undescended testicle.
Enlarged lymphatic glands.
Inflammation of the iliopsoas bursa.
Varicosity of the saphenous vein.
Lipoma.
Hydrocele of the cord.

The femoral hernia lies to the outer side of the pubic spine and is distinguished from the non-hernial affections by its history of development, its anatomical position, and its consistency. The differential diagnosis of an irreducible omental hernia from a subserous lipoma may be impossible.

The accompanying chart is one applicable to a general differential diagnosis; as to the contents of the sac, this is often not determined till it has been opened.

An important sign of hernia of the bladder into the femoral canal is the presence of fat in the upper and inner portion of the sac; when this is found the bladder should receive first consideration. It is not a constant factor, but occurs often enough to list it with the diagnostic points of bladder hernia.

Patient, Mrs. S., aged twenty-eight, has had four children. The first child was born in 1903 at the end of the seventh month of pregnancy, due to a fall down a flight of stairs two days previously. Delivery was normal. On the twelfth day following delivery the patient noticed a swelling the size of a hen's egg in the right groin. The swelling at the time caused no pain or any other symptoms, but remained about the same until after the delivery of the last child, which was in 1908. During this whole time she had received no attention, thought the growth was a fatty tumor, and decided to let it alone.

Following the last confinement the tumor mass began to cause some discomfort, and during the year 1908 the patient had five or six attacks of vomiting, diarrhea, and suffered a great deal of local pain, which radiated down the thigh as far as the inner side

	LOCATION.	REDUCTION.	PERCUSSION.	IMPULSE.	PAIN.	TEMPERA- TURE.	DIGESTIVE SYMPTOMS.	OTHER SYMPTOMS.
Inguinal hernia.	Inner side of pubic spine and above	Outward, upw ward, easily	Dall if omentum, tympanitic if	Upon coughing.	When down.	Absent.	None.	Usually remains down and of long standing.
Incomplete reducible	Same as inguinal.	Partially reduced and re-	Dowel. Usually dull.	Upon coughing. Constant pain.	Constant pain.	Absent.	Constipation.	History of strain or injury
Strangulated ingui- nal hernia.	Same as inguinal.	Cannot be reduced.	Dull.	None.	Severe pain.	Rise of tem- perature.	0	onset sudden, chill, sweat, rapid pulse, vomiting.
Femoral hernia.	Outer side of spine and below Poupart's	Outer side of spine Backward and upward, ap-game as inguinal. Upon coughing. When down. and below Poupart's pears upon coughing.	Same as inguinal.	Upon coughing.	When down.	Absent.	vomiting. None.	
Irreducible femoral	Same as femoral.	Cannot be reduced.	Dall.	None.	Constant pain.	Absent.	Constipation.	Same as inguinal.
Aneurism of femoral	m	No reduction.	Dall.	None, but bruit	None, but bruit Pressure symptom.	Absent.	None.	Typical aneurism symptoms.
artery. Psoas abscess.	Below and extends up May be able under Poupart's lig-	May be able to push contents under ligament.	Marked dulness.	ns present. Present on coughing.	Painful.	Septic tem- perature.	Septic t e m- Loss of appetite.	Swelling constant and no reduction.
Undescended testi-	Lies within the canal.	Undescended teeth Lies within the canal. Can be reduced as in ingul- Dull.	Dall.	None.	None.	Absent.	None.	Absence of testes in scrotum.
Enlarged lymphatic glands.	Enlarged lymphatic Below Poupart's liga- glands.	nal pernia. No reduction.	Dall.	None.	None.	Usually some.	Poor appetite.	Peripheral cause.
Inflammation of ilio-	m	No reduction.	Dall.	None.	Severe pain.	Some.	None.	Other glands enlarged.
Varicosity of saphe-	Below Poupart's liga-	Can be reduced by pressure.	Dull.	None.	None.	Absent.	None.	Same condition along other
Lipoma.  Hydrocele of cord.	May be anywhere. Follows the canal.	No reduction. Oan be reduced.	Dull. Dull.	None. Slight.	None. None.	Absent.	None. None.	None. Reduction very slow and return same.

of the knee. These attacks generally came on about 8 A.M. and usually lasted about two and one-half hours. Upon urination the patient would feel somewhat relieved, although at times urination would have no effect on the pain. She seldom urinated more than twice a day, and at times would retain her urine for twenty-four hours without the least discomfort.

During the year 1910 the attacks became more severe and frequent, often as many as four in one week, but not of longer duration. It was at this time that the patient observed with each attack the tumor mass becoming larger, harder, and exhibiting a peculiar bluish tint.

In September, 1911, the spells came on daily, with as high as four in one day. It is to be remarked here that the patient never had a single attack during the night.

In the early part of November we were called to see her during the morning hours. She was found suffering untold agony, and upon examination we found a tumor mass in the right groin which could not be reduced. Pressure upon the mass produced excruciating pain. She stated that the same condition had existed often, although she had said nothing to any one on account of the fear of having to be operated upon. She was advised to stay in bed. When seen somewhat later she was sitting up, and said that since she had voided urine she felt much better. She consented to an operation, and was removed the following day to the Lutheran Hospital. Her temperature and pulse had been normal through the whole time of the trouble.

An incision a little higher than the usual femoral cut was made on account of the peculiar location of the mass. Upon dissecting through the structures the first thing to attract our attention was the presence of two distinct masses. The one proved to be the omentum and the other the bladder. The latter resembled a cyst and could easily have been mistaken for such. The wall was extremely thin and had no resemblance to the bladder. It was adherent to the surrounding tissues, and there was no way to remove it except by careful dissection,

which was decided upon. The work had no sooner commenced when the bladder was buttonholed, and from it exuded a clear fluid with no apparent odor. A thorough investigation of the pelvis revealed that there was no involvement of the other organs, the tubes and ovaries being in a normal condition.

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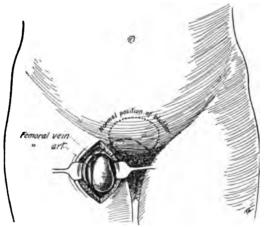
A catheter was then inserted in the urethra to be used as a guide in freeing the bladder from all adhesions. The dissection was carried high up, and the protruding part of the bladder was freed from all adhesions. This left the edges in a ragged condition, and in order to get perfect apposition these were removed. The mucous membrane was then sewed with No. 1 catgut, the continuous suture being used. The rest of the layers were sutured separately. allowing each layer to be anchored to the preceding one so as to eliminate all dead space, no drain being left in any part of the bladder work, as it was thought best to take the risk of union by first intention. The bladder was anchored to the anterior abdominal wall over the symphysis pubis and the rest of the work carried on in the following manner, on account of the great amount of dissection that had been done. The sac with its contents was brought down as far as possible and opened. omentum was cut off and returned to its normal place. The sac was also cut very short, and the overlapping method used so as to insure perfect union. The peritoneum was closed with the continuous suture, which is not usually done; then the iliac fascia was brought in apposition so that a floor would be reëstablished. The fascia lata was treated in like manner, thus assuring us a good field to finish our work.

The accompanying drawing, made by Mr. Tom Jones, artist of the St. Louis University, illustrates the exact location of the bladder as found before anything had been done. One can clearly see that it was impossible to make an accurate diagnosis unless all the organs are considered, and when this is done the rest of the work is as a rule very simple.

Beger's operation was now used to finish the work. It consists in passing a curved needle through the inner portion of Poupart's ligament, the needle then passing downward, taking a firm hold of the pectineal fascia and muscle, then outward through the fascia lata overlying the femoral vein, and finally upward, passing out through the roof of the canal about onefourth of an inch from the entrance.

Instead of the single suture as recommended by Beger we used three, so as to insure perfect closure. In this method the femoral vessels can be watched, and the danger of too close ligation of the tissues is thus avoided. The remaining parts were closed layer by layer with the continuous suture, no drain being left.

A catheter was then inserted in the bladder and left for three days, after which the



patient was catheterized every two hours for three days; then every three hours for three days; then every four hours for three days; at the end of which time she was allowed to void of her own accord. This she did every three hours during the day, and seldom voided more than twice during the night.

It is now three months since the operation was performed and the capacity of the bladder is normal, holding about one pint without any discomfort. The urine is clear and normal. Cystoscopic examination shows the bladder to be in good position and the mucous membrane of the trigonum to be injected. The remaining portion of the bladder is normal in color.

All that remains is a mild catarrhal cystitis of the trigonum, for which the patient is receiving an injection of a twenty-

per-cent solution of dermatol (bismuth subgallate) in sterile olive oil every third day. Half an ounce is injected, and the patient is told to retain it as long as possible. This is generally not more than one hour. It is surprising to see how readily an ordinary cystitis clears up under the above treatment.

#### RHEUMATIC AFFECTIONS OF SOME OF THE SPECIAL ORGANS.

BY JOHN J. KYLE, M.D.,

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For many years the cause of rheumatic inflammation was presumed to be purely a chemical one, due especially to the presence of uric acid. The origin of bacterial infection involving the eye, ear, nose, and throat is difficult to determine in a great many cases. I firmly believe that the infecting organism is primarily the streptococcus rheumaticus associated with other organisms, and that the inflammation is often localized. The infection may be transmitted through the blood or lymph stream, and finds its entrance more often through the tonsils, or gastrointestinal tract. From my limited observations, and granting the possibility of a narrow outlook of an otologist and rhinologist, there is a preponderance of examples that suggest the tonsil as frequently being the avenue of infection in socalled inflammatory rheumatism. presence of a tonsil free from the classical symptoms of inflammation is no evidence that somewhere in that tonsil and near the capsule there is not hidden a small pocket of pus. I have frequently found these small pockets of pus, almost sterile, near the capsule of the tonsil, in which the tonsil was apparently free from inflammation, yet in a hypertrophied or cryptic condition. Removal of the tonsil in its capsule and section of the same is the only way to clearly demonstrate whether or not any areas of infection are present. The size of the tonsil has nothing to do with the amount of infection—that is, a small tonsil with a single crypt may do more damage than a large tonsil in which the crypts have been partially obliterated bv inflammation. Sometimes the removal of the tonsils will show an area of infection and without a history of recurring attacks of tonsillitis.

Of the many inflammatory conditions of

the throat, those of so-called rheumatic nature are not the most infrequent. There is a supposition, at least with me, that a condition closely allied to rheumatism is often present, but on account of indistinct ocular symptoms is overlooked or diagnosed as a neurosis or some local irritation. In consequence the treatment is empirical.

Irritation of the oropharynx, rheumatic in character, is not usually characterized by much hyperemia or inflammation, differing thus from typical rheumatism of joints and muscles. However, in the great majority of cases, the patient will give a history of wandering pain in some joint or region of muscles, in addition to symptoms of irritation in the throat and neck muscles. The condition may be acute or of very long standing and does not respond to local treatment. It may be self-limited, and local irritation pass away in a few weeks.

Many cases of acute coryza and nasopharyngeal irritation are often due primarily to the streptococcus rheumaticus, and respond to the usual rheumatic therapy.

The diagnosis of rheumatic coryza is difficult, for the reason that coryza and nasopharyngitis may be due to so many causes that only by the application of mixed vaccines and their quick results can we feel that the disease is really so-called rheumatic.

It is a good presumption that many of the pains in the nose, radiating to the eye, in which no internal pressure is detected and there is no suppuration of the sinuses, are rheumatic. So many cases of this character respond to aspirin compounds that one is excused for giving undue importance to the rôle of infection in the etiology of many obscure head pains, especially in the region of the nose, temple, and forehead. Rheumatism as an etiologic factor in diseases of the eye is well recognized. The eye condition may be confined to the conjunctival (ocular) muscle, or iris. I have seen a single muscle involved. These three structures are apparently more susceptible to this form of infection than other structures of the eye. Rheumatic inflammation of the eye more often follows in the wake of a like condition in some other part of the body. That the inflammation is of an infectious nature no one cares to dispute at this time.

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The diagnosis of rheumatic iritis is not very difficult, syphilis and rheumatism being the two important factors in causing the disease.

During the discussion of the subject of rheumatism I mentioned the ear as an organ sometimes involved. I have usually associated whitish places or calcareous deposits found in the drum membrane with rheumatism or a rheumatic tendency. These deposits are primarily of inflammatory origin and may be seen in the drum membrane of the young or old. Their presence at least suggests a rheumatic tendency with prospects of a distinct onset of the disease at some future time. So far I have not associated catarrhal or suppurative otitis media with rheumatism, but think that the disease may localize itself in the middle ear.

Politzer is authority for the statement that rheumatic paralysis of the acoustic nerve does sometimes occur and quotes Hammerschlag as having reported a number of such cases. The same may be said of the facial nerve, which may become paralyzed from a local or general rheumatic infection.

Rheumatic involvement of the larynx is a condition more often observed than a like condition of the ear. From its anatomical location and lymphatic supply it is readily susceptible to a spread of the disease from the tonsils. Acute polyarthritis has been observed in laryngeal joint disease from urethral gonorrhea. The infection from the streptococcus rheumaticus may affect one or another muscle of the larynx. The patient complains of pain in the region of the larynx, constant, or during

the act of speaking or swallowing. There is usually pain upon pressure in some distinct spot, and irritation upon mechanical movement of the laryngeal box. Examination with the laryngoscope does not always show local change. The diagnosis is made upon the history of the case.

The treatment of rheumatic affections of the upper air tract is both prophylactic and curative.

For the prevention of rheumatism it is necessarily imperative that suppurating foci be sought and eliminated. As suggested, these tonsils should be carefully inspected. The history of an attack of rheumatism, inflammatory in character, or wandering pain about some portion of the body, following an acute tonsillitis, is highly significant that the tonsils should be removed.

Where we have cryptic tonsils and foul odor from the tonsils, symptoms of rheumatism are evidence enough that the tonsils should be removed. Sometimes the odor is not detected until the tonsils have been removed, when on examination a faint, sickening odor can be detected.

A discharging ear, chronic in character, may be the origin of the infection, likewise a suppuration in any of the air spaces in the skull, but in either case the plausible avenue of infection is through the tonsils, the infection spreading by the lymph stream to the tonsils.

Previous to the introduction of the modified bacterial derivatives (Schafer) the treatment was local and constitutional. The constitutional treatment consisted of salicylates or aspirin. These two remedies increased the phagocytosis, lowered arterial pressure, and thus many times relieved the condition.

With the new Schafer treatment we not alone increase the phagocytosis by injecting directly into the system a powerful multiple vaccine, but inhibit and destroy the activity of the infecting organisms. This one new remedy (Schafer), which so far has been a valuable one in my experience, has a dual advantage over salicylates and their derivatives.

Case 1.—Rheumatic iritis. Patient aged forty years; second attack of iritis; inflam-

mation confined to the left eye; had been suffering for one week before coming under observation; had had three doses of rheumatism phylacogen in 5-Cc. doses without any relief of symptoms. Patient put to bed and given salicylates in large doses. The following morning reported complete absence from pain; on the fourth day left the hospital free from pain.

In this case I feel absolutely certain that the phylacogen must have had a decided and beneficial effect and that the salicylates were greatly assisted in their therapeutic effect by the previous doses of phylacogen. This was one of my early cases, and in consequence of this I lacked my present faith in the phylacogen. There was a slight rise of temperature in this case.

Case 2.—Mr. H., aged fifty-six years, consulted me April 15, 1912. History of rheumatism in neck and throat for six months continuously; said he had suffered a great deal from sciatic rheumatism; complained of pain and smarting of the throat with tenderness of neck and muscles for three months past; no temperature. No objective sign in throat; tonsils atrophic.

Rheumatism phylacogen in 5-Cc. doses was administered biweekly; eight injections were given, followed by a two-week interval, while patient visited in Atlantic City. No reaction, as fever or chill, from the injection. The doses were given at long intervals, on account of the occupation of the man and his frequent absences from the city.

Results good. After three weeks he complained of little or no distress in throat. Treatment continued biweekly up to date, but in 2½-Cc. doses.

Case 3.—Mr. S., aged forty years, complained of severe pain in throat; aching in and tenderness about the neck muscles; some difficulty in swallowing; pain and distress continued for forty-eight hours before consulting me; no objective symptoms. Patient instructed to go to bed and receive rheumatism phylacogen in 10-Cc. doses, July 5. The day following he reported at the office, saying the throat was very much improved. Patient said he felt some general distress following the administration of the drug, but nothing of any conse-

quence. Injection repeated the second day. On the third day patient reported the symptoms had disappeared.

Case 4.—Man, aged fifty years. History of articular rheumatism, dating back for years; attacks usually lasted five or six weeks and sometimes much longer. This was a case in my own family, and in consequence I went outside my specialty. When I saw the patient his right thumb and indexfinger were greatly swollen, red, and extremely painful and tender to the touch. There was also swelling of like character over the dorsum of the right foot. Patient could hardly walk; temperature 102°; had been suffering with this condition for a week before I saw him. The swelling sometimes subsided and then recurred in some other portion of the body. We put this man to bed and began the administration of phylacogen in 5-Cc. doses. There was no untoward results from the phylacogen, except one day. We continued this treatment daily for a week, with the exception of the day when he complained of the reaction. On this day his temperature ran to 103°. At the end of the week he was able to drive out in his carriage. We suspended the daily injection of phylacogen and gave it only twice the following week, rather as a prophylactic measure than anything else. At the end of the second week patient was able to be about. The results in this case were distinctly favorable.

Case 5.—Woman, aged sixty-seven, in my own family; suffered from rheumatism for years, this time localized in the hands; had just returned from a trip around the world, and at Colombo was laid up in bed for quite a while with rheumatism. I gave her four doses of rheumatism phylacogen, repeating the dose daily, and kept the patient in bed all the time. In this case there was only slight rise of temperature, but nothing of any consequence. As to the origin of infection, I do not know. The treatment was discontinued after the fourth day as her symptoms were rapidly disappearing. Two months have now elapsed, and the patient reports that she is still free from pain.

CLAYPOOL BUILDING.

### EDITORIAL.

#### THE MASSACRE OF THE TONSIL.

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Under this somewhat ruddy title Dr. John N. Mackenzie, Clinical Professor of Laryngology and Rhinology in the Johns Hopkins University and Laryngologist to the Johns Hopkins Hospital, presented a paper at a meeting of the Medical and Chirurgical Faculty of Maryland, which was published in the Maryland Medical Journal for June, 1912. His views, which are those of a man of long practice and large experience, and which are also those of a specialist, are so entirely in accord with our own, representing the view held by the general practitioner, that we have been much interested in his sharp attack upon the prevalent methods of dealing with tonsils that are thought to be diseased. He utters a formal protest against the indiscriminate and wholesale destruction and removal of the tonsils, which, he asserts, is the chief and most glaring abuse in the laryngology of the present day, and he states that a distinguished general surgeon informed him that of all the surgical insanities within his recollection this onslaught on the tonsils is the worst, not excepting the operation on the appendix. The author's conservative view at this time is all the more valuable because he admits in times past he has been enthusiastic in regard to certain surgical procedures, and admits that it has been facetiously said that "the street in front of his office was paved with the turbinated bones of his victims."

Dr. Mackenzie does not deny for a moment that there are many conditions which call for more or less complete destruction of the tonsil. His claim is that a more careful selection should be made of cases for operation. Knowing as little as we do in regard to the function of the tonsil we have not sufficient information to determine whether its removal produces indirectly any untoward effects. It is because Mackenzie believes that never in the history of medi-

cine has the lust for operation on the tonsils been as passionate as it is at the present time that he wishes to raise a warning hand, since this lust has not only infected the general profession but the laity, and the latter have recently begun to attribute all sorts of symptoms in remote portions of the body to disease of these glands. Mere enlargement of the tonsils or adenoids is not a cause for their removal, since it may be well said that almost every one before the twentieth year at some time has what may be called a physiological enlargement of these organs. Mackenzie evidently has not much faith in tonsillectomy as a sure cure or absolute prophylactic against rheumatism and heart disease. There is no more evidence to believe that these organs are the portals of entrance or avenues of exit for infection than they are protective barriers against infection. Occasionally these barriers may, in the battle with invading organisms, become diseased and need treatment, but often their enlargement is due to the battle and tends to give the tonsils the victory.

We have not space to quote in extenso all of the reasons which are advanced by Dr. Mackenzie for his views. He brings to bear upon the matter facts in comparative anatomy, and then calls to our attention certain clinical facts which are of considerable importance. The chief practical lesson which he believes we are to learn is that in cases in which the throat, and particularly the tonsil, is apparently the starting-point of infection it is mandatory to examine the entire upper air tract and not be be content with appearances that are visible to the eye through the mouth alone, for infection takes place through nasal cavities or postnasal spaces as frequently as through the tonsils. The mere size of the tonsil is of itself no indication for removal unless it be large enough, or diseased enough, to interfere with pharyngeal or larygeal functions. Another point of importance which he emphasizes concerning the question of tonsillotomy versus tonsillectomy is that tonsillectomy except in individuals in whom the organ is totally diseased is an unnecessary operation in the great majority of cases, and may be supplanted by many other methods which are perfectly safe and efficient and which lack its many serious objections. He brings forward a considerable number of reasons why tonsillectomy should be avoided, the most important of which is that it is a capital operation, a dangerous one which should be done only in the hospital and by a surgeon who is particularly trained in this work.

Mackenzie is well aware of the fact that his statements will be controverted by operative enthusiasts who will exclaim "Look at the results," to which he replies that he can readily present a partial list of results from the practice not of the ignorant but of the most experienced and skilled, namely, death from hemorrhage and shock, development of tuberculosis in the lungs and adjacent glands, laceration and other serious injuries of the palate and pharyngeal muscles, great contraction of the parts, removal of one barrier to infection, severe infection of the wound, septicemia, troublesome cicatrices, suppurative otitis media and other ear affections, troubles of vision and voice, ruin of the singing voice, emphysema, septic (infarct) pneumonia, increased susceptibility to disease at the seat of operation, pharyngeal quinsy, and last, but not least, tonsillitis in the remaining portion of the organ.

Finally he concludes with these words: "Let us hope that the day is not far distant when not only the profession but the public shall demand that this senseless slaughter be stopped. Is not this day of medical moral preaching and uplifting one to lift the public out of the atmosphere in which it has been drugged, and for the reckless tonsillectomist a proper time to apply the remedy of the referendum and recall?" Well does he add that we are going through to-day in laryngology what the gynecologist went through years ago in regard to ovariotomy.

# THE TREATMENT OF INFECTION OF THE URINARY TRACT BY THE BACILLUS COLI.

Infection of the urinary tract by the bacillus coli is by no means rarely met with in clinical medicine and surgery, and, furthermore, it is a state which is met with both in the very young and the very old as well as in middle life. In some instances the symptoms are definitely associated with the urinary organs either because the patient suffers from pain or discomfort or because the presence of pus in the urine is manifest even to the naked eye. In other instances, however, distinct, localized urinary symptoms are absent and may be supplanted by other symptoms which do not seem to be connected with this portion of the body, and only after the urine has been centrifugalized and the deposit examined under the microscope is pus discovered, and the presence of the colon bacillus recognized. It is hardly necessary to add that before considering that the bacillary content of the urine is due to infection every precaution should be taken that the urine is not contaminated by the air, by the external genitals, or by its being received in a vessel which is not surgically clean.

The urinary symptoms, as we have said before, vary materially. In some instances where the kidney is involved the symptoms may be those of an intense, diffuse nephritis which may go on to the development of multiple small abscesses, the infection being unilateral or bilateral. In other instances only the pelvis of the kidney is involved, so that a pyelitis is present, and this again may be unilateral and bilateral. When an acute nephritis is present rigors, followed by sharp fever, often develop, and there may be signs of sepsis throughout the general system with partial suppression of urine and a heavy cloud of albumin on boiling. In the cases in which there is pyelitis, with or without the infection of the bladder, the symptoms are usually more moderate, but nevertheless the patient may be very ill. Casts and blood are very rarely found, but albuminuria may be marked. As one would suppose, this form of the disease is rarely

fatal. Then again there are cases of chronic infection of the pelvis of the kidney, or of the bladder, in which the symptoms may be very mild, and at times quiescent, with outbreaks of fever and general wretchedness, leading to the supposition that there is a stone in the kidney or in the pelvis of that organ.

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In examining the urine in cases of pyelitis and cystitis due to the colon bacillus it is well to remember that although it may be cloudy and opaque it is usually acid and without odor. Its turbidity does not disappear on the addition of acid or on heating, and even filtering does not clarify it, but the centrifuge, as we have already said, may reveal ous cells and the bacilli. As pointed out by Mackey in the British Medical Journal of May 4, 1912, the colon bacillus may be so clumped as to cause the microscopist to report that there are masses of granular débris. The exact character of these masses can be determined by using the stains which are employed for the purpose of discovering this bacillus. treatment of these cases varies somewhat as to whether they are acute, subacute, or chronic. Undoubtedly a good many recover spontaneously, particularly if some other cause for the infection has existed, such as pregnancy or one of the acute infectious diseases. With the termination of pregnancy, or of the acute illness, the vital resistance wins in the battle. So far as drugs are concerned it is well to remember that those which render the urine alkaline are better than those which render it acid. and potassium citrate or bicarbonate may be used for this purpose. As a rule, the ordinary urinary antiseptics fail in colon infection of the genitourinary tract. It is in this class of cases, however, whether they be acute or chronic, that vaccine therapy produces some of its most satisfactory results, either a stock or autogenous vaccine being employed. Where a stock vaccine fails an autogenous vaccine should be resorted to. The injections are commonly given about twice a week and the dosage should be ascending. Mackey starts with 50,000,000 and increases his dose by 50,-000,000 at each administration until 600,-

000,000 are used. Indeed, the ultimate dose may amount to 1,500,000,000.

Concerning operative treatment it is noteworthy that washing out the bladder does not seem to be very wise, since it often changes a pure infection of the bacillus coli into a mixed infection. Irrigation of the pelvis of the kidney is practically impossible for the majority. Where operative interference by the use of the knife is thought of it is well to remember that pregnant women usually recover from this infection when the pregnancy is terminated without operative interference; also, if the infection be severe and involve both kidneys, it will do the patient no good and indeed much harm to diminish her eliminative powers one-half by extirpating one organ. If the ureteral catheter proves that only one kidney is involved, the infection is persistent, and the health of the patient is being undermined, the question of operative interference is of course to be considered. Finally it is interesting to note that Mackey emphasizes in concluding his article the fact to which we have already drawn attention—that infection of the urinary tract by the bacillus coli may present symptoms so little associated with this tract that they may be assigned to other causes. well therefore to bear this quiescent form of colon bacillus infection in mind.

#### BERIBERI AND ITS TREATMENT.

The pages of a journal devoted to therapeutics are not adapted to the consideration of the etiological factors of beriberi, a disease which occurs in the United States so rarely as never to be seen by the average practitioner, being met with only by those who come in contact with the crews of vessels which, as a rule, come from tropical countries. Nevertheless, any investigations which are made concerning the etiology and treatment of disease possess an interest to all of us, for even if they have no direct bearing upon the results of a man's daily task they are at least illustrative of what may be done in conquering disease. It is not necessary to describe the various theories which have been advanced concerning the causation of this curious form of polyneuritis. Some have considered that it was due to an infection; others that it was due to the ingestion of some poison; and still others have believed that, like scurvy, it depends upon some fault in the dietary of the individual. Still another theory has been that while the fault in diet may be the prime one, the actual neuritis is due to an infection which is only possible when the food has been unfit.

The investigations which have been made in the therapeutics during the last few years by the Japanese, the Germans, and, most notably, by American medical officers, have seemed to prove decisively that the use of polished rice is the direct cause of the malady, since when unpolished rice is used beriberi does not occur. In other words. fancy or high-priced rice which has been milled does not possess the food value of unpolished rice, and lacks certain very important constituents for nutrition, particularly if the food of the individual consists almost entirely of this vegetable substance. The polyneuritis of fowls seems to be identical with the polyneuritis of human beings, and has again and again been produced experimentally by feeding polished rice.

What the actual substance is in unpolished rice which prevents the development of beriberi has not as yet been determined. Some people have thought that P<sub>2</sub>O<sub>3</sub> was the missing element, but others have seemed to prove that the administration of this substance does not prevent the development of beriberi. However this may be, wherever American surgeons have insisted upon the use of unpolished rice beriberi has practically ceased to exist.

The investigations have now been carried from the occurrence of beriberi in adults to the recognition and cure of infantile beriberi, a disease which produces a frightful mortality in the Philippines and those parts of the world which are adjacent to them. In the Bulletin of the Manila Medical Society for February, 1912, Chamberlain and Vedder presented a most interesting communication upon this subject, proving that when a child is affected by beriberi the

administration of an extract of rice polishings produces as beneficial results as promptly and as definitely as does the administration of beef juice and orange juice to a child which is suffering from scurvy. This is the more important because these cases of infantile beriberi develop in children still at the breast, the fault existing in the mother's milk because she has been fed on polished rice. Treatment can be carried out not only by the use of this extract, but by giving unpolished rice to the parent whereby lactation can go on; whereas if artificial feeding is attempted, a high mortality from digestive disorders immediately ensues, particularly among the poor. The symptoms in these children consist in vomiting, great restlessness and continual whining, and later dyspnea, increased cardiac action and edema of the face and legs, and still later scanty urine and loss of voice. The dose of the extract of rice polishings given to a child of three months is twenty drops every two hours. The vomiting stops almost immediately, urinary flow is reestablished, the edema disappears in the course of a few days, and usually on the first night after treatment the patient falls into a deep sleep, although it may have been practically sleepless for several days or weeks. Barring the aphonia a cure often follows in seven days, but the aphonia sometimes persists for two months. Chamberlain and Vedder describe in detail their method of preparing this extract, which we do not include in this discussion because it is a matter of detail which does not interest our readers directly.

As they express the belief that the greatest mortality of breast-fed infants in the Philippines is due to beriberi, the importance of their etiological and therapeutic investigations can be readily appreciated, the more so as they strongly believe that the infectious theory of this disease is no longer tenable. If a further investigation confirms their preliminary observations, occidental medicine will once more preserve life in the Orient by the wholesale, and a most interesting and valuable addition to therapeutics in the tropics will have been made.

### SURGERY OF NEPHRITIS.

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The surgical treatment of nephritis, independent of stone, tumor, ureteral obstruction, or tuberculous infection, has been evolved in part, at least, from operative measures undertaken because of a mistaken clinical diagnosis. After splitting a painful and bleeding kidney for either a suspected stone or other gross lesion, it was noted not once but many times that though the diagnosis was proven wrong and simply a nephrotomy had been done, the patient who recovered from the operation was relieved of his symptoms and remained, in some cases at least, definitely and permanently well. A further impetus to surgical procedure in the absence of gross and demonstrable lesions was given by Edebohls's contribution on the subject of decapsulation for the relief of anuria and for the continued betterment of renal elimination in cases of advanced Bright's disease.

Theoretically decapsulation was based on the belief that it accomplished an immediate relief of tension, by splitting and turning back the capsule, and by the hemorrhage incident to this operation; and that subsequently a collateral circulation was formed which would provide the kidney with a sufficient quantity of constantly changing blood for the proper performance of its function.

Both clinical and experimental study have shown that an adequate collateral circulation cannot be expected to form; that in place of a stripped capsule there is formed a dense fibrofatty investment with little vascularity and capable of producing more pronounced pressure than the thin proper capsule of the kidney. None the less there are many recorded cases which apparently show the immediate benefit to be derived from decapsulation when there is pronounced urinary intoxication. Since, however, Bright's disease has for one of its characteristics extraordinary and apparently causeless fluctuations in symptomatology, those apparently moribund recovering at times under almost any treatment, it has been held that the evidence for decapsulation is still far from convincing.

The subject of surgical intervention for the relief of symptoms incident to nephritis has been for many years one of major interest to Kümmell, who contributes the results of an admirable clinical study (Archiv für Klinische Chirurgie, 98 Bd., 3 Heft). Considering first acute nephritis, Kümmell regards that incident to infectious processes. and particularly to scarlet fever, as accompanied by a greatly increased intrarenal pressure, and quotes Harrison to the effect that this pressure is comparable to that of the eve in glaucoma, the kidney affection indeed being called pernicious renal glaucoma. The intrarenal pressure first functionally and then organically destroys the renal parenchyma, causing either death or invalidism from chronic nephritis. indication for either splitting the capsule or nephrotomy would seem to be fairly plain in cases of this nature accompanied by anuria.

Toxic nephritis caused, for instance, by sublimate, carbolic acid, chloride of lime, or other chemical poisons, seems also to call for direct surgical intervention where anuria results from it. The author records a striking case in which no urine was passed for seven days. A few hours after decapsulation 500 grammes were passed, and in eighteen hours over a liter in all. Doubtless the kidneys would have continued secreting had not the patient died.

As for that form of acute nephritis characterized because of its major symptom as eclampsia, more than 100 cases have been reported. Sippel notes that of 46 decapsulated eclamptics 30 recovered. Poten has recorded 98 operations with 38 deaths.

Acute infectious nephritis, by which term is meant that of hematogenous origin, characterized by multiple abscesses, is considered particularly amenable to surgical treatment. The condition is characterized by the general symptoms of violent infection; blood, pus, and bacteria in the urine; rigidity of the muscles over the kidney suggesting a peritonitis; and in its localization as to the kidney affected by ureteral catheterization. Kümmell reports twentyeight cases varying in age from sixteen to sixty years; of these three died. All of the

cases were unilateral; colon bacilli, staphylococci, and streptococci were the infecting organisms. Seventeen nephrectomies and eleven nephrotomies were performed. Kümmell announced himself as now less inclined to nephrectomy than in former days. This operation is followed by prompt healing, but in spite of all modern methods of examination the surgeon cannot be absolutely assured of the complete health of the remaining organ. Two of his three mortalities occurred from anuria coming on more than a week after an apparently entirely successful operation. Nephrotomy is slow to heal, sometimes bleeds, and sometimes leaves a long standing fistula. however, is the operation of choice unless the kidney is obviously so completely destroyed as to leave no secreting substance.

As to the question of spontaneous healing of acute hematogenous nephritis, it can scarcely be doubted that such can occur. though this result must be an exceptional one, so exceptional that it should have no weight in considering the question of operation: this should be undertaken even when the affection is demonstrated to be bilateral. In unilateral infection sepsis is always violent, and this in itself may cause a toxic nephritis in the kidney not yet bacterially involved. It therefore follows that the infected kidney should be treated by incision or complete splitting as soon as the diagnosis is made. Indeed, Kümmell regards acute infectious nephritis as preëminently a form of inflammation which calls for operative interference and responds favorably to this when it is performed in time.

As to chronic nephritis Kümmell first considers the affection which he calls nephritis dolorosa, formerly termed nephralgia or renal neuralgia. These cases were originally cut for stone or other gross lesion. Later it was observed that the capsule was thickened and adherent to the fatty envelope. There was fibrous infiltration of the kidney itself and hyperemia of the parenchyma. Portions of the kidney substance removed at operation showed chronic nephritis, as did the urine obtained by ureteral catheterization. Always it was observed that there was a circumscribed

nephritic process or one in its early stages. Even at the present day a differential diagnosis from a small uric acid calculus may be difficult or impossible. There may be acute colicky attacks or persistent pain with exacerbations usually located in one side. It is undoubtedly true that chronic nephritis is in the vast majority of cases a bilateral process, none the less it has been abundantly proven by clinical reports that exceptionally it may be limited to one side. Even in those cases of unilateral nephralgia a careful investigation usually shows involvement of both kidneys. Kümmell has seen 13 cases in which the most pronounced symptom was unilateral pain, and in 10 of these a diagnosis of nephritis could be made before operation. In four cases decapsulation was practiced, in nine the kidney was split. One of the patients was operated on in 1891. He suffered from left-sided colic, which was supposed to be due to Nephrotomy completely relieved him of his pain. He later died of nephritis. All the other patients were completely cured, 3 for six years, 2 for four years, 2 for three years; the rest were operated on within the last year. This experience is corroborated by many reported cases and apparently justifies the operation of decapsulation or nephrotomy in these cases.

Hemorrhagic nephritis, variously called renal hemophilia, renal epistaxis, and hematuric nephralgia, the latter name because it is often accompanied by pain, was at one time characterized simply by case reports without pathological findings; later it was recognized as a form of chronic nephritis. The distinction from tumor is by no means an easy one to make. The catheterization usually shows a healthy bladder and bleeding from one kidney which may be extremely free, and may, by occluding the ureter, cause renal colic, followed by expulsion of typical, worm-like casts. Traces of albumin and leucocytes are usually observed in the urine, but the casts are as a rule not found. The patients are generally cachectic, and indeed a single suggestive symptom in regard to the nature of the affection may be the demonstration of a bilateral nephritis. Operative treatment is the only therapeutic measure which has proven of service. Indeed intervention is called for from the diagnostic standpoint alone, since if the bleeding be due to tumor its early and complete removal offers the only chance of cure. Examination of the extirpated kidneys showed an early glomerular nephritis with such slight alterations of the renal tissues that only serial sections of the entire kidney can demonstrate it beyond controversy. Macroscopically the kidneys were apparently entirely normal; the same findings resulted from the examination of small excised portions.

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Kümmell has observed 17 cases of hemorrhagic nephritis, always, in so far as the bleeding was concerned, unilateral. One patient, a profoundly anemic man, sixtytwo years old, died of hemorrhage during operation. Autopsy showed a chronic bilateral nephritis. One young man died eight months after nephrectomy from uremia incident to progressive degeneration of his remaining kidney. One patient on leaving the hospital exhibited a low freezing-point with casts and albumin in his urine. The remainder were cured. Many of them had been observed for several years. Nephrectomy was performed nine times, decapsulation four times. Kümmell favors decapsulation. Should this fail nephrotomy should then be practiced. It is obvious that these cases of renal neuralgia can by decapsulation or nephrotomy return to work with apparently perfect health, even though from the strict anatomical standpoint a cure cannot be expected.

As to medical nephritis, or Bright's disease, by this is meant the usual parenchymatous or interstitial nephritis characterized by albumin and casts in the urine, nearly always bilateral, and accompanied by edema and marked deterioration in health. Kümmell has operated on 26 cases. Two died within a few days, one in two months, one in five months, one in a year and a half, and one in six years. In five cases the operation was without benefit. In 14 there was more or less distinct improvement. In none of the patients were albumin and casts entirely wanting after operation, with one exception. A young man twenty

years old suffered from nephritis for four years. The year after double decapsulation he was perfectly well and the urine was normal. Lessening the quantity of albumin and of casts, general improvement in health and gain in weight and the ability to resume work have been observed in ten cases. In the most severe cases with uremia and anuria at least a transitory betterment may be expected, nor if it be done under local anesthesia, if this is possible, is the operation a difficult or dangerous one. No death is reported as the direct consequence of surgical intervention. Doubtless nephrotomy would be a more radical and serviceable procedure than decapsulation, but Kümmell believes that this operation is too formidable and attended by too great a bleeding to justify it. As to the comparative merits of nephrotomy and decapsulation, the former seems the more efficient in accomplishing relief of renal tension.

### ANESTHESIA BY INTRAVENOUS INFUSION.

Although there is a general acceptance upon the part of the surgeons of America of ether, or oxygen nitrous-oxide ether, as efficient means of accomplishing anesthesia when these agents are given by skilled anesthetists, this is by no means true of the Continental surgeons. Since because they hold divergent views, and, partly because of imperfect technique they have had results that are not entirely satisfactory, new methods are being constantly tried, both experimentally and clinically. This development is particularly well marked in the application of spinal or of block anesthesia, secured mainly through the use of novocaine or similar drug. Ether administered intravenously has also received much study and commendation, and a limited clinical use. Since ether can only prove efficient when it is absorbed by the blood, its immediate injection therein seems rational. Moreover, it has apparently been shown that provided this injection be made with due precautions it is comparatively safe.

Rood (Proceedings of the Royal Society of Medicine, April, 1912) in view of the

many advantages offered by a direct administration of the anesthetic by the blood, and encouraged thereto by Kümmell's report of 90 successful cases, in no one of which did postanesthetic vomiting occur, improvised an apparatus differing from Burkhardt's original one in that the flow of ether is minutely regulated. At first a 10-per-cent solution of ether—that is, 2 ounces to the pint of saline—was used. This caused a transient hematuria, usually present in the first specimen of urine passed after operation, and not afterward. A 5-per-cent solution was followed by no such result, nor could hemolysis be observed on blood examination. Later experiments with a solution containing 11/2 ounces of ether to one pint of saline showed that this concentration was equally free from risk.

The saline solution is prepared in flasks in which it is boiled and then cooled. Shortly before it is required the ether is poured into the cold saline and the flask shaken. The patient is prepared for the anesthetic in the ordinary way and also receives a hypodermic injection of atropine, or atropine and morphine, morphine and scopolamine. A cannula is tied in the median basilic or cephalic vein: this under local eucaine anesthesia. The solution is first allowed to flow rapidly, the regulating tube being turned full on. The induction of anesthesia is usually accomplished quickly, three or four minutes being the average time, the ordinary signs of automatic respiration, muscular relaxation, and abolition of reflexes being present. As soon as anesthesia is established a little experimentation determines the minimal flow which will maintain it. The noticeable features of the anesthesia are regularity and smoothness, also the ease with which it can be graduated and the great rapidity with which patients respond to slight alterations in dosage.

Rood has tabulated 136 cases in which he has used the method. Of the 62 laparotomies, three afterward vomited and four developed shock. The dosage was from 34 to 2½ pints in the first hour. The most given was 434 pints in three hours. Of 53 operations upon the mouth and jaws, from

34 to 2½ pints were given in the first hour. Three afterward vomited slightly. operations on the extremities there was no after-vomiting, and the quantity given was from 1/4 to 11/2 pints in the first hour. Rood states that the most striking advantage of this method is seen in those cases in which the patient is in a condition of extreme inanition from exhaustive disease, the injections seemingly in themselves so stimulating the individual that he often leaves the table in a much better state than that in which the operation was begun. In any case in which the patient is likely to be benefited by a saline infusion, either as a means of relieving shock or hemorrhage, or because shock is expected, this method has given excellent results.

Of 136 cases observed by Rood, only six vomited at all, and these were cases in which blood had been swallowed during the operation. It will be remembered that Kümmell had no cases of vomiting in 90 administrations. One four months' child was thus anesthetized, atropine alone having been given previously, the quantity of ether being very small.

As a further contribution to this interesting topic of intravenous infusion Page reports on 75 cases of what he terms hedonal anesthesia. He notes that the induction of general anesthesia by the intravenous injection of drugs was first effected in man in 1872 by Ore, the drug employed being chloral; 53 cases were reported, in 51 of which satisfactory results were obtained. In 1909 Burkhardt published his application of the principle, using solutions of chloroform first and then ether.

In 1910 Federoff suggested the intravenous administration of hedonal. Last year at the Congress of the German Surgical Association, Federoff contributed a brief account of 530 cases collected from three Russian clinics; no death directly attributable to the anesthetic was reported in this series.

The method is one of interrupted injections. A 0.75-per-cent solution of hedonal in normal saline is placed in a flask from which it can be forced by air-pressure; leading from the flask is a long rubber tube

terminating in a fine hollow needle. superficial vein is exposed and punctured by the needle, and a volume of fluid sufficient to produce general anesthesia injected; the needle is then withdrawn and reinserted for the purpose of further injections as they become necessary. In the course of an operation lasting one hour and fifty-one minutes, five such injections were required. In Jeremitsch's 65 cases, the total amount of fluid injected in any one instance varied from 325 to 1100 Cc. The anesthesia was not satisfactory in two cases—in one of these because the vein isolated was so small that the injection was carried out with difficulty, and in the other instance the injection was made in the internal saphenous vein, which was varicose. The only complication recorded was respiratory depression. This appeared in one case, and was attributed to a too rapid injection of the fluid. Federoff notes that respiration was affected in eight out of the 530 cases he collected.

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Hedonal anesthesia has been employed in the St. Thomas Hospital in over 100 cases, and has been thoroughly satisfactory in every instance. The method of continuous gravity-fed infusion is practiced.

Hedonal, or methyl-propyl-carbinol-methane, is a white crystalline solid, stable at ordinary temperature. It is soluble in water at 100° F. in the proportion of 1 in 100. The solution can be boiled without affecting the drug, although prolonged heat diminishes the concentration owing to the volatilization of a certain amount of the compound. Animal experiments show it to have ten times the hypnotic effect of urethane, and twice that of chloral. It causes slight fall in the blood-pressure. No fatalities have been attributed to its use as a narcotic.

The solution is dissolved in normal saline at a temperature of 70° F., making a 0.75-per-cent solution. The resultant fluid is filtered once, boiled for five minutes, and stored in sterile flasks. The contents of the flask are warmed to 140° F. and poured in the tank, which is furnished with a thermometer gauge and tapped exit tube. From the latter runs a yard of pressure tubing,

and in the course of this a dropper is inserted; it terminates in an ordinary fine infusion cannula. Before infusing, the temperature of the fluid in the tank is reduced to about 115° F.; for long operations the tank may be placed in a heat-retaining jacket. The cannula is tied in a vein as for an ordinary infusion. The fluid is run in at a rate of 50 to 150 Cc. in the minute, the rapidity of flow being accurately controlled by regulating the tap of the flask and watching the flow through the dropper.

Page states that in the first 50 cases the median basilic or cephalic vein was chosen, but in the last cases the internal saphenous vein was the choice, at the point where it passes over the internal malleolus. Within a minute or so of the commencement of the infusion the patient becomes drowsy and often yawns; he has a subjective feeling of warmth and well-being, the face flushes, and if the infusion is too rapid a certain degree of cyanosis may arise; then follows a period in which the patient appears to be in a state of deep, natural sleep; this state merges rapidly into one of complete general anesthesia: the deep reflexes are absent, and the corneal reflex absent or sluggish; the pupil usually remains small. In none of the cases was there any struggling, a few showed slight movements of the extremities, and some talked incoherently during induction. Respiration remains quiet and regular unless obstructed by the falling back of the tongue, an emergency which must be guarded against; the pulse remains full and steady; the blood-pressure drops slightly, and then remains fairly constant.

The amount of fluid necessary to induce anesthesia varies considerably—40 Cc. sufficed in a child aged ten months; 1000 Cc. was necessary in a heavily built man aged twenty-five. The average dose in an adult is 500 Cc. The period of induction varies from two to thirteen minutes. As soon as the state of anesthesia is established the rate of flow of the fluid is cut down to a slow drip. The necessary rate varies with the type of patient, and is soon gauged by experience; should the reflexes show signs of returning the rate of flow is increased.

The largest total amount of solution in-

fused in any one case was 1750 Cc., given to a man sixty-one years old. The anesthesia lasted over one hour. Old people require less of the drug than do younger ones of similar body weight. After operation the patient usually sleeps from six to twelve hours and then wakes. He may be drowsy from twelve to twenty-four hours. Vomiting is exceptional; headache of a slight degree, and lasting for a day or two. was complained of in 15 cases. or urine changes were found. The only danger symptom noted was cyanosis. This appeared in six cases, and in all, excepting one, was caused by obstruction of the airpassages. That one exception was incident to a very rapid injection of the fluid. Federoff records a temporary stoppage of respiration occurring in eight of 530 cases; in each instance normal breathing set in again after a few movements of artificial respiration. Owing to the comparatively slow rate at which the drug is excreted, very small quantities of solution suffice to maintain anesthesia when once it has been completely established.

Infusion anesthesia is, theoretically at least, to be avoided in cases of chronic engorgement of the lungs or when the cardiac action is not accurately compensated. Page advises for strong healthy patients 3 grammes of hedonal given about two hours before the operation.

Napier (Glasgow Medical Journal, July, 1912) makes a further contribution to the subject of ether anesthesia by intravenous infusion. The apparatus consists of a stand 8 feet high, which supports a 3-pint reservoir connected by a tube to a glass dripping or injecting chamber placed below and of 8-ounce capacity, and below glass warming chamber. When the apparatus is ready for use the solution of ether in normal salt passes from the reservoir by means of rubber tubing and drips through a pipette into the indicator, the lower half of which is filled with the solution, while the upper half contains air. The fluid then flows through the warming chamber, which is surrounded by a jacket containing water at a temperature of 100° F. The fluid is warmed in its passage

through this chamber, which is so constructed that by means of a fluid-trap air bubbles and ether vapor are prevented from passing onward. From the warming chamber the solution passes through a rubber tube and cannula into the vein. As this arrangement forms a closed system, the rate at which the fluid flows into the dripping chamber indicates the rate of flow of the solution into the vein. The saline used to prepare the 5-per-cent solution of ether must be cold, since if used warm the ether would vaporize and escape. An unduly weak solution means a long induction period and the use of an excessive quantity of fluid, thereby causing grave risk of sudden edema, general or local, as, for example, edema glottidis.

The risk of overdose is negligible. hypodermic injection of morphine hydrochloride 1/6 to 1/4 of a grain, atropine sulphate, and scopolamine hydrobromide is given about three-quarters of an hour before operation. In very strong and vigorous patients it is advisable to give this injection about an hour and a half to two hours before operation, and to give an additional injection of morphine about one hour later. The atropine lessens secretion and is said to lessen reflex cardiac inhibition. morphine and scopolamine render the patient drowsy and semiconscious, so that struggling during the induction period is reduced to a minimum, and a very small amount of ether is required to maintain a satisfactory state of anesthesia. After inserting the cannula into the vein a fairly rapid flow is maintained until the patient is anesthetized. The cock is then turned, so that the solution passes by drops into the dripping chamber; but the flow should never completely cease owing to the danger of thrombosis occurring at the point where the cannula is introduced. About 8 ounces are required to induce surgical anesthesia, and to maintain it somewhat more than a pint an hour. Napier states that the method is contraindicated in the alcoholic, plethoric, and muscular type of patient, and instances a case in point, a carcinoma of the tongue, which after fifteen minutes and one pint had to be supplemented by chloroform.

### REPORTS ON THERAPEUTIC PROGRESS.

### TREATMENT OF THE VOMITING COUGH OF TUBERCLE.

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H. PAILLARD (Journ. de Méd. et de Chir., Feb. 26, 1912, art. 23,532) concludes a thesis on the functions of the diaphragm with a study of the above conditions. Numberless drugs are in use, the patients changing the remedy every four or five days; the vomiting, temporarily arrested, returns more obstinately than ever. Chloroform water-used with success by Matthieu and Roux, though it has failed in the experience of many doctors-seems to give more lasting results than other drugs, but the time of administration is most important. It should be given immediately after the ingestion of food, before the fit of coughing begins. By calming the nervous excitability of the stomach the starting of the reflex is prevented. To the same end Lion gives 20 grammes of bismuth subnitrate diluted with two-thirds of a glass of water. Paillard insists on the necessity of rest after meals; exertion brings on breathlessness, which may sometimes cause the vomiting cough. Rest ought to be taken in the right lateral decubitus, which has two advantages—the pylorus is in a position favorable to the emptying of the stomach, and there is the least amount of displacement of the left diaphragm. But the essential therapeutic point is a short inhalation of oxygen at the opportune moment. Paillard instructs his patients thus: "Have a bag of oxygen constantly at the foot of your bed. After a meal, when you feel the fit of coughing coming on, take up the bag and breathe a few whiffs of oxygen; the fit of coughing will not occur, or, if it does, it will be slight and you will not vomit; if there is any tendency for it to return some minutes later, breathe a little more oxygen. Above all, follow your appetite, and do not let the fear of vomiting restrict your diet. Do not forget that you ought to breathe little oxygen at a time, and that the same bag ought to last you at least four or five days." Under this treatment Paillard has found that the trouble disappears, generally at the first attempt. The result is lasting in the great majority of cases if the inhalations are continued for some weeks; rarely (three times in thirty-two) the vomiting reappeared, but the combination of chloroform-water treatment with the administration was sufficient to effect a complete cure.—British Medical Journal, June 15, 1912.

#### BISMUTH POISONING IN SURGERY.

PETER (Wien. klin. Rund., Nos. 17 to 20. 1912) calls attention to the danger of poisoning from the use of bismuth in surgery, whether it be used as a dressing or in conjunction with x-rays. The symptoms resemble in general those due to poisoning by lead or mercury - namely, dark-colored patches on the mucous membrane of the mouth, fetid sores on the lips and cheeks, salivation, tenderness and loosening of teeth, and difficulty in swallowing. The urine contains albumin, and is often of a greenish color, or it may contain a cloudy deposit, which becomes dark on standing. Death usually occurs from nervous exhaustion, accompanied by delirium, convulsions, or paralysis. Post-mortem the most characteristic changes are seen in the mucous membrane of the alimentary tract, which is stained a dark green or black color, and the kidneys may be also stained and congested.

The author records cases of poisoning in the course of various surgical procedures: (1) In burns. He describes four cases in which extensive burns were dressed with bismuth ointment. Severe symptoms of poisoning followed, which in one case ended fatally. In these and in other cases the granulation appeared to be taking up the bismuth in a finely divided state. (2) In sinuses and fistulæ. Beck, of Chicago, in order to render the extent and ramifications of fistulæ visible by x-rays, filled them with

a vaselin paste containing 30 per cent of bismuth subnitrate. The procedure had the unlooked-for result of rapidly healing oldstanding tuberculous fistulæ, and seemed to be an ideal method of treatment for such obstinate lesions. But several cases of poisoning occurred—the author cites 12 cases with 6 deaths; and he considers that the injection of bismuth into sinuses, especially into those connected with joints or with the pleural or peritoneal cavities, is too dangerous to be justifiable. (3) As a dressing for surgical wounds. Kocher introduced bismuth as a substitute for iodoform. Though excellent for superficial wounds, when used freely as a dusting powder in such operations as excisions, it frequently caused unpleasant symptoms. These were apparently chiefly in the urine, which showed a greenish color resembling that due to carbolic acid, and indeed it was to carbolic acid that the early symptoms were often attributed. On opening up the wound and scraping out the bismuth the symptoms usually subsided rapidly; but one fatal case is recorded, in a delicate woman of fifty-six, after amputation through the shoulder-joint for osteosarcoma. Other preparations containing bismuth, such as dermatol and airol, have also caused symptoms of poisoning when used as a dressing. (4) As the "bismuth meal." When bismuth subnitrate has been administered, either by the mouth or by the rectum, as a preliminary to the examination of the stomach or intestines with x-rays, very grave and fatal symptoms have occasionally been observed; but in these cases they are of an entirely different type, and resemble those seen in poisoning by the nitrate of amyl or of sodium. These symptoms are referable to the conversion of oxyhemoglogbin into methemoglobin, and to cerebral irritation and paralysis. after the administration of the "bismuth meal" the patient becomes cyanosed; the skin of the whole body becomes of a greenish-gray color, and death occurs in a few Venesection in one case showed the blood to be of the chocolate-brown color characteristic of methemoglobin. The author describes five cases of this nature with four deaths.

Maassen and others have shown that certain bacteria, particularly B. coli, have the power of converting nitrates into nitrites, and they state that feces of children are more active than those of adults in producing this chemical change. In explanation of the great rarity of poisoning by nitrites in this comparatively common use of bismuth subnitrate, it is pointed out that, although they are probably always formed in the bowel from nitrates, they are normally neutralized immediately. has shown that certain intestinal bacterial ferments have the power of reducing nitrites with the formation of ammonia and nitrogen; and it is probable that symptoms of poisoning only appear when, owing to some unusual distribution of the bacterial flora in the intestine, its neutralizing powers are insufficient to cope with the nitrites formed.

In conclusion, the author discusses the question whether the use of bismuth for such purposes as he describes should be abolished. He considers that, having regard to the comparative rarity of poisoning due to its use in surgery, it may be used as a dressing in restricted quantities, especially if a careful watch be kept for early symptoms, so as to avoid more serious results. But he maintains that bismuth subnitrate should certainly be banished from x-ray practice, because the symptoms of poisoning are here so sudden and so severe. This, he says, may the more easily be done, inasmuch as various substitutes have recently been introduced. Among these he mentions magnetic oxide of iron, which is sold, mixed with chocolate powder, under the name of "diaphanite." This is harmless; but iron does not give such a dense shadow with the x-rays as the heavier metals, and the large dose required and its unpleasant taste interfere with its success. The sulphide and the carbonate of bismuth both give excellent results, but while they are free from the danger peculiar to the subnitrate, there is always the possibility of untoward symptoms arising from the bismuth itself. Red oxide of iron (Fe<sub>2</sub>O<sub>3</sub>) is fairly satisfactory and cheap. Oxide of thorium, being very heavy, gives an even better shadow than bismuth, and, on account of its whiteness and freedom from taste or smell, can be given to the most sensitive patients. It is, moreover, extremely stable, and undergoes no change in the intestinal canal. But which of all these substitutes is really the best the author prefers to leave undecided.—British Medical Journal, June 22, 1912.

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### PRACTICAL POINTS RELATING TO THE TREATMENT OF PRURITUS.

Evans in the Clinical Journal of June 26, 1912, reminds us that as the key-note to success is a correct diagnosis, it is all-important to ascertain the causation before appropriate treatment can be instituted; the clinician must closely inquire into each of the following items:

- 1. Condition of anus and rectum—constipation, excoriations, fissures, worms, hemorrhoids, prolapse, rectal polypi or carcinoma.
  - 2. Pubes—dilated veins, pediculi,
- 3. Prepuce—adherency to clitoris, accretions of smegma.
- 4. Urinary passages—e.g., urethra and bladder, vascular caruncle, urethritis (chronic infection of Skene's tubules), cystitis or tumor of bladder (cystoscopic examination), or calculus (x-rays).
- 5. (a) Vulva—labial veins, tumor, hernia, smegma, and glands of Bartholin. (b) Vagina—secretion, foreign bodies, infectious condition of walls. (c) Uterus and appendages—position of uterus, condition of cervix, e.g., erosion or growth, pelvic inflammation, adhesions, tumor or varicocele, prolapse of uterus, phlebitis or lymphatic obstruction.
- 6. Constitutional condition—(a) cardiovascular state. (b) Composition of urine.

Internal medicaments and local applications beyond number have been employed, and each in its turn has played its vaunted rôle, only to be found wanting when its promoter laid unfailing reliance upon it.

Internally.—Sodium bicarbonate, sodium

salicylate, aspirin, pyramidon, calcium lactate, atropine, guaiacum and sulphur, ammonium bromide, quinine, morphine, thyroid extract, phenacetine and allied compounds, and valerianate of zinc.

However, a local lesion demands topical treatment.

Local Applications.—Menthol, camphor, anesthol, alkaline lotions, boracic acid, carbolic acid, salicylic acid, hydrocyanic acid, alum (hot solution), silver nitrate, lin. belladonnæ, lin. chloroformi, sulphurous acid, lead subacetate, lead iodide, cocaine, eucaine, ichthyol, thigenol (ovules), hazeline, morphia, hemisine, coal-tar products, calomel, zinc oxide, peroxide of hydrogen, euthymol, adrenalin, and chloretone.

Douches.—Tinct. iodini, lactic acid or sour milk, silver nitrate, protargol or argyrol, carbolic acid, creolin, peroxide of hydrogen.

#### PRESCRIPTIONS.

Powders.	Ointments.
Calomelanosparts j.	Bismuth carbon-
Zinci oxidiparts ij.	atisgr. x.
Amyliparts iij.	Zinci oxidigr. x.
Subgallate of bismuth.	Lanoliniad 3j.
	Ung. picis3ij.
	Ung. belladonnæ3ij.
	Tr. aconiti3ss.
•	Ung. aq. rosæ ad3j.

For application to the vaginal wall so as to allow of contact to every part of the mucous membrane, the following solutions or pastes are best applied per speculum or as a tampon:

(a) Glycerin and bis- muth carbonate	(c) Liq. carbonis detergensf3j.
made up into a paste.	Glycerin
(b) Silver nitrate.gr. x. Aqad 3j.	Pulv. calaminæ.5ss. Aquæf5j.

#### Suppositories.

ippos	Itorit	m cnio	retone	co.:		
(	Chlor	etone .			gr	. j.
1	Aceta	nilide			gr	. j.
7	Zinci	boratis			gr.	3/2.
I	Pluid	golden-	seal	(colorles	s)m.	ij.
				· · · · · · · ·		
1	Borog	lyceridi			q	. s.
	_	-			-	

Suppositories may be made of thiodine . (10-per-cent), hydrastine, boroglycerin, ichthyol, iodine, thigenol, etc.

Radiotherapy.—X-rays are undoubtedly

useful, but when employed in severe cases to the degree necessary to give relief the vulva is to a considerable extent depilated.

Radium, on the other hand, has given better results than any other method, so that for the past four years Evans has employed it in all cases of pruritus vulvæ which have been sent to him in consultation. In radium we undoubtedly have a therapeutic agent of inestimable value in an otherwise almost hopeless condition.

Intense pruritus vulvæ has been cured by the use of the constant current—the anode being applied to the vulva, the cathode to the various other parts affected.

The operative measures consist in:

- (a) An efficient application of caustics or cautery to an erosion of the cervix.
  - (b) Curettage if endometritis exists.
- (c) Divulsion—anesthesia is necessary—of the vaginal constrictors, with the introduction of Sim's glass tube or a thick gauze plug.
- (d) Removal of the glands of Bartholin. As a change from one remedy to another may be necessary, we should be very cautious in our prognostic commitment as to the immediate, early, or even possible cure.

In the employment of all local applications a detail of considerable importance is the employment not only of a diaper but of a piece of gauze or soft tissue to separate the labia. This is essential to prevent irritation of the surrounding parts and a spread of the disease.

Remember that sleep is very important. Many sufferers wander from physician to physician before any one of them has had an opportunity to treat the condition. Even the most deplorable cases may—with due care, the application of medicaments, and the aid of surgery judiciously applied—be ameliorated and even cured provided the patient surrenders herself entirely to the practitioner's care.

Pruritus vulvæ has lost much of its power since the introduction of cocaine; even cocaine may give only temporary amelioration of the distress. Various methods, even to the excision of the more sensitive portions of the skin and mucous membrane, have failed. However, radium affords an agent which, as far as the experience of Evans goes, is invariably successful, and is to be urged in all cases when the simpler remedies have failed.

#### ULTRAVIOLET LIGHT IN THE TREAT-MENT OF ALOPECIA.

HARRIS in the Lancet of July 6, 1912, says that the ultraviolet light made use of in his cases was obtained from iron electrodes between which sparks were discharging from an oil condenser attached to a 10-inch coil actuated by 24-volt accumulator batteries giving 5 to 7 amperes in the coil primary.

The plan of treatment was practically that recommended by Dr. Kromayer, but as the current available for this treatment was so small the sittings were much prolonged and each place was subjected to half an hour's exposure. The skin was separated from the quartz compressor by solid ice cut in squares of convenient size, about threequarters of an inch thick. It was renewed as often as it melted, and the metallic oxide on the inner surface of the quartz wiped away at the same time. Good reaction with peeling of the skin followed, the hyperemia lasting a week as a rule, but occasionally longer. A second administration was not given until most of the hyperemia had disappeared. In the total cases tracts were chosen for treatment that could again be found easily, such as the frontal, parietal, or occipital tract corresponding to the bones of those names. When the tract became painfully hyperemic it was given rest, whilst another was similarly treated. When the hair began to grow the treatment was still continued until it became about half an inch In the areata cases it was noticed that the hair usually spread in from the periphery toward the center, so that the space became gradually smaller.

Many of the cases were long and tedious ones which had undergone topical treatment with all the usual remedies before coming to the electrical department. It was considered advisable to continue a mecurial lotion and an acetic acid lotion unless they caused irritation. These lotions were regarded in the nature of a placebo for the portions of the scalp which could not be treated by means of the ultraviolet light rays. The cases treated were nine in number, as follows:

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No. of	Sex.	Age.	Complaint.		Duration of treat-ment.		Result.
1 2 8 4 5 6	F. M. F. M. F.	12 24 19 4 15 22	Alopecia	areata. totalis. areata.	18 5 4	onths.	No result. Cured. Hair grow-
7 8 9	M. F. F.	25 19 15		 alis pitis only.	11	"ionths.	ing. Cured.

Case 6 should be regarded as cured, for the hair, which had been quite at a standstill, began to grow almost directly this treatment was commenced. She was anxious to go home. Case 7 was one of those in which alopecia seems to follow ringworm. On commencing the treatment the hair began to grow, to the great relief of the parents, who feared permanent patchy baldness. No x-rays had been used. Case 9 was the most striking of all, being total to the scalp only. The eyebrows and lashes were never completely lost, nor the armpit or pubic hair at all, yet her scalp became clothed with thick and long hair. After remaining well for quite six months she has just now returned with one or two areata patches.

It would seem from the report of Dr. Kromayer and the above that this form of treatment is quite worthy of an extended trial.

# THE RAPID CURE OF AMEBIC DYSENTERY AND HEPATITIS BY HYPODERMIC INJECTIONS OF SOLUBLE SALTS OF EMETINE.

Writing in the British Medical Journal of June 22, 1912, Rogers reasserts his belief that ipecacuanha is a drug with an interesting past and a brilliant future. The Brazilian root was first brought to Europe by Piso in 1658, and was successfully used by Helvetius in the treatment of Louis XIV., and

sold as a secret remedy to the French government. It was given for dysentery, chiefly in small doses, by Twining and many other Anglo-Indian physicians, but it was not until 1858, exactly two centuries after Piso, that Surgeon E. S. Docker, I.M.S., introduced the use of large doses (60 grains two or three times a day) of powdered ipecacuanha in the treatment of severe dysentery in Mauritius, with the remarkable result of reducing the death-rate of the disease from a former annual rate of 10 to 18 per cent to only 2 per cent. His excellent results were rapidly confirmed by numerous physicians in India, but it was not until 1880 that Docker's great services to humanity were tardily rewarded by the government with a gratuity of £400!

Maclean and Norma Chevers in 1886 advocated the use of ipecacuanha in the treatment of acute hepatitis, but two or three decades later the pendulum again swung in the opposite direction, and the drug was largely replaced by ammonium chloride in hepatitis and by salines in dysentery, chiefly as a result of the success of the latter in very early and mild attacks of colitis. Indeed, only a few years ago a committee of London pharmacologists actually advised the omission of this invaluable drug from the medical panniers to be taken on field service by the army in India, so far had the Brazilian root fallen in the estimation of the medical profession. During the last few years ipecacuanha has once more gained ground, mainly on account of Sir Patrick Manson's advocacy of it in dysentery, and of the writer's success in the treatment of early acute amebic hepatitis.

Doubtless the principal cause of the vicissitudes of ipecacuanha is the production of very disagreeable and exhausting nausea and vomiting by the large doses which are essential to obtaining its full curative effects. This serious drawback is only partially overcome by the present methods of giving the drug in salol or keratin-coated pills, and the use of opium, chloral hydrate, or tannic acid to check vomiting. Last year Vedder showed that emetine, the principal alkaloid of ipecacuanha, has the power in high dilutions of destroying amebæ in broth cultures, although it is not clear that this was a pathogenic form, which most recent authorities believe has not yet been culti-Rogers has, therefore, tested the effect of the soluble emetine hydrochloride on A. histolytica in dysenteric stools, and has found that, on placing a piece of mucus containing numerous active amebæ in normal saline solutions of this salt, the pathogenic organism is immediately killed and materially altered in its microscopical appearance by a 1-in-10,000 solution, while after a few minutes they are rendered inactive, and apparently killed, by as weak a solution as 1 in 100,000.

He therefore decided to try if this powerful alkaloid can be safely administered hypodermically in the treatment of amebic disease, and has obtained such striking results in a few patients that it seems to be advisable to make them known to others.

### THE COMBINED TREATMENT OF SYPHILIS.

Power in the British Medical Journal of June 22, 1912, asks the question, What is the best treatment for syphilis in the present state of our knowledge of the disease? Taking, for the sake of example, the case of a surgeon or of a nurse who is inoculated in the course of professional duty, the wound should be well washed under running water, like a wound obtained in the post-mortem room. It should then be dried and covered with an ointment consisting of 10 grammes of calomel in 30 grammes of lanolin. This mercurial ointment should be gently rubbed into the wound for five minutes, and a dose of salvarsan (0.6 gramme) should be given intravenously. The prophylactic action of the mercurial ointment appears to end-at any rate experimentally-within twenty-four hours of inoculation; the salvarsan is said to be serviceable in checking the generalization of the disease even when the seat of inoculation has become characteristically indurated and the lymphatic glands are enlarged. The fact, however, that the lymphatic glands do not return wholly to their natural condition after the administration of salvarsan in early syphilis rather inclines him to distrust the drug as a sole remedy, and should lead one to give mercury in some form or another as soon as possible.

A Wassermann test should be made at an early period after inoculation, although it will probably be negative in the very earliest stages, for, as has been stated already, our present knowledge shows that it is usually positive in five to eight weeks after infection; it is positive in 95 per cent of cases during the secondary stage, and in 75 per cent during tertiary manifestations, but it is only positive in 50 per cent of cases where syphilis is latent. Mercury should be given at once when the infection is undoubted, but in the more difficult cases, in which the diagnosis is doubtful, it may be withheld until a positive Wassermann reaction has been obtained.

Preferably the mercury should be given by intramuscular injection, and Colonel Lambkin's formulæ are quite satisfactory as far as he has used them. If, for any reason, the intramuscular method cannot be used, inunction may be employed. when, as in ordinary private practice, the drug has to be given medicinally, Power thinks the perchloride is better than the gray powder which has been used in England for a long time past. It would seem that so long as mercury is given in small doses, systematically, and for long periods of time, the exact preparation used does not matter very much. The mercury should be given with regulated periods of rest, and a Wassermann test should be made at the end of each period just before the mercury is recommended. If the test is negative an intravenous injection of salvarsan may be given with a view to elicit a positive result. If the test still remains negative after this injection the mercury may be discontinued for a further period so long as there are no signs of syphilis, and at the end of a further period of two months the test should be again employed. Marriage may be permitted under these conditions when the Wassermann test has remained negative and there have been no syphilitic symptoms for at least a year.

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In this manner we shall avoid giving mercury for a longer time than is absolutely necessary, whilst the drug will be continued until the syphilis is cured, even when the absence of symptoms might seem to make a further mercurial course unnecessary. We shall also have taken a step in advance of Colonel Lambkin, who was obliged to take a time limit with absence of symptoms as a guide for discounting a mercurial course because the scientific test had not yet become available.

There are two objections to the use of Wassermann's test as an answer to the question whether or not an individual is cured of syphilis. In the first place, it is purely a laboratory test, and we are consequently at the mercy of the pathologist who makes this examination. This objection is easily surmounted by always employing the same pathologist. The second objection is much more serious. It involves the fallacy that Wassermann's test is an absolute proof of the presence or absence of spirochætæ infection, and even in the light of our present knowledge it is certain that we are not justified in making such an assumption, because the test remains negative in a certain percentage of cases in every stage of syph-Clinical experience and the caution begotten of it must still guide our advice therefore, but recent advances in the treatment of syphilis have been so great that we need not despair of obtaining some reliable test even in the immediate future.

### TREATMENT OF INFANTILE SYPHILIS WITH THE MILK OF GOATS IN-JECTED WITH SALVARSAN.

JEANSELME, VERNES and BERTRAND (Paris Médical, 1911-12, No. 1) report the results of a case of congenital spyhilis in a child of five weeks with the milk of a goat treated with seven injections of salvarsan into the jugular vein (30 cg. for the first, and 40 cg. for the other injections). The symptoms in the child improved slowly for a time, and

then remained stationary, necessitating recourse to mercurial treatment. The milk, tested by Bougault's method, showed no trace of arsenic, and, when compared with milk containing a known quantity of arsenic, led the authors to conclude that the amount of arsenic present in the goat's milk, if any, must have been not more than 1/10 mg. per The authors mention a case of Jesionek (Münch, med, Woch., 1911, No. 22) concerning a child of five years who was treated with the milk of a goat injected with 40 cg. of salvarsan on the supposition that the drug was excreted in the milk. In this case rapid improvement was reported, but Jeanselme's observations do not confirm this.—British Medical Journal. June 22, 1912.

### NEOSALVARSAN.

In the New York Medical Journal of June 29, 1912, RYTINA discusses this new drug. Kersten has shown that the tolerance dose for guinea-pigs is 0.2 gramme against 0.08 of salvarsan. Injection into mice also showed that the preparation is decidedly less toxic than salvarsan. At the same time it was learned the curative effects in recurrent fever exceeded those of the old preparation. Ehrlich proved the same properties for neosalvarsan in experimental trypanosomiasis.

The method of preparation is simplicity itself. All that is necessary is to add neosalvarsan to the water, and it completely and immediately dissolves, with little or no shaking, producing a clear, transparent, light-yellowish liquid, which is absolutely neutral. Vigorous shaking is not necessary or allowable, as oxidation will easily follow. The oxidation products of neosalvarsan are more toxic, according to Schreiber, than the preparation itself. The preparation should not be prepared with normal salt solution, as this makes it more toxic and causes turbidity. The temperature of the vehicle should be the same as that of the room.

The solution should be prepared and injected extemporaneously on account of the rapid oxidation. The distilled water used

as a vehicle is made fresh on the day of injection. It is first filtered, then distilled, then sterilized, then cooled to the temperature of the room.

For intravenous injections 20 Cc. of the freshly distilled water is used to every 0.1 gramme neosalvarsan—e.g., 0.9 gramme neosalvarsan (corresponding to 0.6 gramme salvarsan) is dissolved in 180 Cc. of water.

For intramuscular injections the solutions are prepared in the same way, only the powder is dissolved in from five to ten cubic centimeters of water.

The solutions thus made are absolutely neutral; there is no need to add sodium hydroxide. A good many of the poor results of salvarsan are no doubt due to the use of concentrated acid solutions, leading to precipitation in the blood, with a resultant formation of emboli, lung infarcts, etc., or the addition of the sodium hydroxide con-Darier was the first to show that thromboses following alkaline injections are due to a too strong quality of the alkaline content. Furthermore, the alkaline solution is not easily kept sterile, and numerous instances have been observed where the sodium hydroxide solution has been substituted by some other compound. advantage, therefore, of doing away with this part of the preparation, besides the simplicity, is obvious.

As the neutral solution yields itself well to intramuscular injections, and as the method is more simple, a more prolonged and protracted action is obtained, and the clinical results are better, he is giving for the present, at least, the preference to the intramuscular over the intravenous injections, except in the early primary stages, where a more extensive action is required. His method is to dissolve the powder in from 5 to 10 Cc. of water, depending upon the size of the dose.

He has given the injections in a dilution as high as 30 Cc. of water and noted severe pain and local swelling following. The pain following the injection seems to vary in proportion to the amount of fluid used, and as a dilution of 5 to 10 Cc. causes much less pain and local swelling, and does not

increase the local or general toxic effects, he is employing that degree of concentration, and the injections are made in the gluteal or lumbar regions, usually half in each side. The part is previously sterilized by painting with tincture of iodine. He gives four injections of 0.9 gramme neosalvarsan at weekly intervals.

General reaction phenomena have been practically nil. In the more acute cases he has noted a slight transient nausea and a temperature of 99.4° F., but otherwise the patients have experienced no ill effects.

Immediately following the injection the patients experience a variable amount of pain. The injections in the intralumbar region, after the method of Meltzer, are more painful than the injection in the gluteal regions. Ordinarily, the pain lasts several hours and gradually subsides. After about twenty-four hours there develops at the site of injection an induration, which usually is not tender to touch, or an edema, which is painless and pits upon pressure. This lasts for a few days and gradually disappears. There is no redness, heat, or other sign of acute inflammation. To date, he has not observed any abscess formations, coagulation necrosis, sciatica, paralysis, or other complications so often seen after intramuscular injections of salvarsan. If desired, the pain can be lessened by an injection about five minutes previously of novocaine or alypin solution. Following intravenous injections in one case, accidental displacement of the needle was not followed by the pain and local disturbance that follows a similar accident while administering salvarsan.

As to clinical results: He has given to date twenty-one intravenous injections and twenty-eight intramuscular, and the immediate results are fully as good as those following salvarsan injections. The spirochætæ disappear within twenty-four to forty-eight hours in chancres, mucous patches, and condylomata, and the symptoms melt away with at least the same rapidity as after salvarsan. He is making careful Wassermann tests in all his cases,

but as yet he has not observed them long enough to make the report of any value at this time.

The indications, contraindications, and preliminary examinations are the same as for salvarsan.

For the present he is not, in the majority of his cases, combining with the neosalvarsan mercury and potassium iodide, not because he does not approve of this excellent plan, but merely to afford neosalvarsan an unhampered opportunity to prove its real worth and value.

From his study and brief experience, he feels justified in drawing the following conclusions:

- 1. Neosalvarsan is a highly soluble and absolutely neutral compound.
- 2. The clinical results are just as effective, if not more so, as those of salvarsan.
- 3. Injections are free from the severe constitutional and local reactive phenomena that often follow injections of salvarsan.
- 4. On account of the neutral reaction, the preparation lends itself well to intramuscular injection, thereby allowing a more prolonged and protracted action.

### NUTRIENT FEEDING PER RECTUM BY THE DROP METHOD.

EBERHARD in the American Journal of Gastro-Enterology for July, 1912, gives the following technique:

First cleanse the rectum and colon with a warm normal saline solution. Elevate the head of the bed, and after seeing that the nutriment is warmed to about body temperature it is placed in the inner can and surrounded with water at a temperature of 110°-115° F. in the larger can. Regulate the flow to a drop a second and insert nozzle into rectum.

It requires about one to one and a half hours for ten ounces of milk and two raw eggs to flow into the bowel; during which time the water in the larger can may have to be changed several times. Some of the diseases and conditions in which Eberhard has found the drop method especially valuable either as the sole nutriment or as an

auxiliary are acute inflammations of the stomach with persistent vomiting, recent hemorrhage, hyperesthesia of the stomach, where for secretory reasons it is necessary to rest the stomach, stenosis of esophagus or pylorus, late carcinoma of stomach, pernicious vomiting of pregnancy, etc.

He appends the following as the nutrient enemata which have given best results:

White of three eggs 90	calories.
Peptonized milk, 9 ounces	"
Table salt 0	44
264	**
Warm milk, 9 ounces174	calories.
Yellow of two eggs122	"
Grape sugar, one drachm 14	"
Table salt, one-half drachm 0	u
310	44
Warm milk, 9 ounces174	calories.
Two raw eggs140	"
Table salt 0	44
Essence of pepsin, 3j 0	"
314	"

This last named formula has rendered excellent service and seems to act best when prepared as follows:

First heat the milk to about 98° or 100° F. Then beat the eggs, salt, and pepsin together; last of all add the milk and beat again until it drops easily.

Another excellent formula is:

Two raw eggs......140 calories.

One pint of normal saline.

140 calories.

### A FATAL CASE OF TRIONAL POISONING.

Maunsell in the West London Medical Journal for July, 1912, reports the following case:

On April 2, 1912, he was called to a hotel at 8 A.M. to see a lady whom her maid had been unable to wake, and found a well-nourished woman, aged about fifty-five, in bed, quite insensible, color good, respirations rather shallow, pulse variable, occasionally running feebly, pupils medium in size, equal and reacting to light, arms and legs equally flaccid; no smell of drugs in the breath, and no evidence of her having taken any could be found in the room. The

proprietress, and the maid who looked after her, and had known her for some months, were not aware that she was in the habit of taking drugs, and had no reason to suppose that she had cause for attempting to poison herself.

From the symptoms Maunsell concluded that she had taken an overdose of some hypnotic, probably sulphonal, veronal, or trional. He gave her strychnine and digitalone hypodermically, and the heart's action becoming stronger and regular, fetched a stomach-tube, and with the assistance of Dr. Travers washed out the stomach. Nothing abnormal was detected in the washings. She was kept under observation and treatment for sixteen hours, either Dr. Travers or Dr. Maunsell being there during that time. Her condition varied, her heart requiring stimulation from time to time, and her respirations once becoming so faint as to be barely perceptible. Toward midnight her condition improved, and though she did not recover consciousness, she moved her head slightly from time to time. During the next day her respirations became somewhat shallower, and toward the evening some moist sounds were audible at the bases of the lungs. She moaned a few times.

The third day, April 4, her condition became much worse, her lungs filling gradually with hypostatic congestion in spite of varying her position as much as was possible, and of the various remedies tried.

She died at about 3 P.M. without having regained consciousness. The treatment adopted consisted of strychnine, digitalin, and ether hypodermically; hot coffee, introduced by stomach-tube; saline per rectum and intravenously; galvanism; oxygen by inhalation and, at the suggestion of Dr. Dodson, subcutaneously; and artificial respiration.

In her room were found a few prescriptions, chiefly for aperient pills. On inquiries being made at the various chemists who had supplied these, one wrote that he had supplied her with two dozen 10-grain trional cachets some four months back, and had repeated the order at the end of March,

and other chemists had supplied her with smaller amounts at different times.

At the inquest, beyond evidence of old peritonitis, a gall-bladder full of stones, and fatty change in most of the viscera, nothing of interest was found, with the exception of a few small masses of crystalline substance about the size of orange seeds, the remains of the trional powder, and not more than four or five of these.

The points of interest were, first, the absence of any trace, or history obtainable at the time, of her taking any hypnotics, although she was in the habit of taking them: secondly, the condition of the pupils, which led to the diagnosis; and thirdly, the presence in the stomach, although this organ had been washed out, of small masses of the drug, quite small enough to have passed through the stomach-tube, and which had evidently been caught in the folds of the mucous membrane; fourthly, that there is no satisfactory test for the presence of this class of drug in the urine, a fact Maunsell was informed of by Dr. Shaw, to whom he sent a specimen.

This case, as pointed out by the coroner, emphasizes the danger to the public of this class of drugs, owing to the fact that they can be obtained from a chemist without a prescription.

### THE PRESENT STATUS OF SALVARSAN AS A REMEDY FOR SYPHILIS.

The St. Paul Medical Journal for July, 1912, contains an article by WOODWARD on this topic.

Now that we have passed through the stage of somewhat extravagant, indiscriminate, if not at times reckless, use of salvarsan, which perhaps was to be expected considering the eminent source from which it came, and the loud heralding which preceded its advent, we are prepared to give it its proper place in our armamentarium for the cure of syphilis.

. We know better now when to use it, and very much better how to use it, and our experience has taught us that it is not of itself an exclusive treatment, but rather a

valuable adjunct to the remedies we already have for the treatment of this disease; that it should not become the routine treatment in all cases, but that its use should be much more restricted than we had hoped or expected it would be when first introduced.

We have found that whereas "606" would clear up with magical rapidity the gross lesions, such as skin eruption, mucous patches, condylomata, etc., after a few weeks or months a Wassermann would again be positive and it would be seen that the spirochætæ and symptoms had returned, and that notwithstanding they had so suddenly disappeared the disease in the system had not been completely overwhelmed and destroyed, so that in order to hold the benefit to be derived from one injection others must be given, these injections in each case to be followed up by the use of mercury. In other words, we have found that after all in any case mercury must still be our main reliance, and take the precedence, and that in salvarsan we hold in reserve a valuable agent. This fact alone is a confession that our new remedy has not been equal to its professed mission.

The fact that we have not had as brilliant results from its use in this country as they appear to have had in Germany, where it was first used, may be due to the difference in the character of the patients and the conditions surrounding them there and here.

The average patient found in a German hospital is of an entirely different type from the average patient in our country. As a class there they are overworked and underfed. Take such a patient there and clean him up, put him in clean clothes and a clean bed with sanitary surroundings, with a full, generous diet, and we are going to make a remarkable improvement in his condition and appearance, leaving remedies out of the question altogether, so that to a large extent the apparent improvement there may have been enhanced by these new and more hygienic surroundings.

Those of us who have practiced long enough to have watched ultimate results in our cases, say for fifteen or twenty years

or longer, and have had more or less experience in administering the routine treatment of syphilis with mercury or potassium iodide, or both combined, can recall many cases in which we were perfectly satisfied that a complete cure had been effected, and still later we have found that the Wassermann reaction could be made negative by vigorous mercurial treatment, not so readily possibly as by salvarsan, but in either case no conservative practitioner regards this now as an evidence of permanent cure. On the contrary, our experience with mercury as well as "606" does show in many cases a return to positive, and it is expected that this will occur unless followed up persistently for long periods of time, when a permanent negative Wassermann can at last be secured. In the light of our experience. therefore, it would seem a logical conclusion that mercury or mercury and potassium iodide should be our main reliance, and that salvarsan should be restricted to selected cases. The reason for so doing seems still stronger when we consider the painful toxic symptoms which frequently follow its use, although these symptoms are less frequent since the adoption of the intravenous method of giving it; still we often get severe pain following it, with vomiting sometimes, and in other cases diarrhea, cyanosis, skin rashes, albuminuria, and a reaction temperature, and there has been a small percentage of fatalities.

Leredde and Kueneman in the Bulletin of the French Society of Dermatology and Syphilis (Bulletin de la Société Française de Dermatologie et de Syphilie) give us the estimated number of injections gleaned from various sources for the two years 1910 and 1911 as 850,000; of this number they have the records of 468 in which untoward or serious symptoms occurred. Aside from these minor happenings, from which the patients recovered, there were fifty-five deaths; twenty-five of these the authors attribute directly to the drug, seven were doubtful, and twenty-three occurred from causes independent of it.

Again, the injection of salvarsan intra-

venously seems capable of bringing out an inherent heart weakness which may be present, and Ehrlich and others state that myocarditis should be regarded as a contraindication for its intravenous use.

Experiments made upon dogs by J. L. Auer of the Rockefeller Institute for Medical Research, results of which were recently published in the *Journal of Experimental Medicine*, support this position taken by Professor Ehrlich.

This, then, is the situation: We have for syphilis two remedies, one of which is difficult of administration, produces often unpleasant toxic symptoms, attended at times with danger, and an occasional fatality. The other is equally certain to cure, and more so, for its use cannot be dispensed with when the former is used; it is easy of administration, and entirely free from danger. Is it not therefore logical that in the average case, or in the great majority of cases, we should resort to the latter rather than the former? Woodward uses the expression "the average case," for of course he does not wish to be understood as arguing to do away entirely with a remedy of such remarkable therapeutic value, but merely for a less indiscriminate and more restricted use of it, confining it to those cases in which it is especially indicated, and among these he mentions: (1) In very early cases, upon the very first appearance of the chancre, excise the chancre and administer salvarsan at once, thus aborting the disease. (2) In recent cases, in which rapidity is desired to clear up as soon as possible the skin lesions, or mucous patches; these cases to be followed up with mercury. (3) In cases in which tuberculosis is developing upon a syphilitic base. (4) In cases of great anemia which might be aggravated by the further use of mercury. (5) In old tertiary cases, and rare cases in which mercury and potassium iodide singly or combined had been consistently and persistently used for a long period of time without results—in all cases, whether treated by mercury or salvarsan, being guided by frequent Wassermanns.

The intravenous method is the approved

one for its administration, and the technique in use at the University of Minnesota Hospital gives one of the best, although one of the most reliable methods is the one recently published by Dr. A. C. Strachauer, associate surgeon of the University Hospital, which was suggested by and is an adaptation of Bier's method of venous anesthesia.

Woodward believes that it is sometimes a good thing to review these old truths. Notwithstanding all that may be said, the lure of salvarsan still enthralls us, and we are proud of the fact that at last in this particular instance therapy has developed upon a strictly scientific basis.

### INFANT FEEDING AS TAUGHT BY THE GERMAN SCHOOL.

Brady in the *Interstate Medical Journal* for July, 1912, in a long article on this subject has this to say of the rôle of lactose:

For years the adjustment of the carbohydrate percentage to the needs of the infant was considered simple, and seldom thought to be accompanied by any morbid symptoms. Now we know that in a susceptible infant, or one with a pathological condition of the intestinal epithelium as the result of the administration of lactose, a definite symptom-complex may arise. This is the "alimentary intoxication" of Finkelstein, the symptoms of which subside immediately on withdrawing the sugar from the diet. The recognition of the true cause of this syndrome allows us to interpret correctly the nature of enterocolitis and summer diarrhea. The writer would be the last one in the world to minimize the benefit derived from feeding a milk as free from bacteria as possible. However, the laity and many physicians believe that, given a milk free from bacteria, the liability of that particular infant developing diarrhea or green stools is eliminated. There is a well-defined group of infectious diarrheas which depend on bacteria. There is another much larger group of diarrheas which have absolutely nothing to do with bacteria in their etiology.

The disturbance is a metabolic one; its prophylaxis and treatment consist in the proper adjustment primarily of the sugar, and secondarily of the fat in the diet.

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Since the birth of bacteriology we have closely associated the development of a diarrhea in an infant with the invasion of the intestinal canal with bacteria. Experiments are at hand which prove conclusively that fever and loose stools can be caused by the food elements alone. The fact is not sufficiently appreciated that while we must first secure a clean milk, in prescribing that milk we must carefully consider the food tolerance for that individual infant.

We know now that cane-sugar is better tolerated than milk-sugar, and that maltose, which is always fed in combination with dextrine, is most easily burned in the body, owing to the fact that maltase, the ferment which splits dextrine up into its corresponding monosaccharids, is present in all the tissues.

Whey, owing to its high percentage of milk-sugar and the concentration of its salts, has fallen into ill repute. The writer's experience with it, which has been by no means small, has been very unsatisfactory. Great misapprehension exists as regards the stools; their chief constituent is the secretions from the intestinal canal. The sugar and proteid under normal conditions are almost completely absorbed, but fat in the shape of soaps, neutral fat, and fatty acids are always found up to 4 and 5 per cent even in the breast-fed. The green color of dyspeptic stools is usually due to oxidation of bile constituents.

The intervals of feeding are of great importance and at variance with what we usually find recommended in this country. The coagulation of milk begins within two or three minutes after it reaches the stomach, and is completed in ten minutes. The whey passes immediately into the intestine and leaves the solid curd behind. The periphery of the curd is attacked by the gastric juices; after three hours, in the case of cow's milk, the stomach has emptied itself; in the case of mother's milk, in one and a half to two

hours. If milk is taken into the stomach before it has emptied itself, the later milk flows about the curd already present and forms layers around it. In this manner, if the milk is ingested regularly at short intervals, the nucleus of the curd would remain undigested indefinitely. Therefore, it is apparent that the intervals should not be less than three hours, particularly in the artificially fed. Czerny and Keller recommend five feedings in twenty-four hours even for young infants. The amount of each feeding must, however, be large—three and one-third ounces in the early weeks.

From what has already been said, we come to the conclusion that for a healthy infant, throughout the first year, the proteid percentage need not be small and may range from 1.50 to 3.00. Particular attention must be paid to the fat, and it must be increased only when the infant is thriving; it should range between 1 and 3.50 per cent. Maltose, on account of its favorable effect on the weight, and the fact that it is less liable to bring about an intoxication, is to be preferred to lactose.

#### THYMOL FOR TAENIA SAGINATA.

ALLAN in the Journal of the American Medical Association of July 20, 1912, remarks that for the removal of tænia saginata, pelletierin is too expensive for poor people, and it is very difficult to prepare the patients properly for aspidium. Thymol is cheap and requires no preliminary starvation or purgation, and during the past year it has seemed to be very effectual. Allan has removed tænia saginata from three individuals, eleven, nine, and five months ago respectively, with no recurrence to date. In each instance the worms had been so broken up that the head was lost and not brought into the office, but careful observation of the stools by the patients has failed to demonstrate the passing of any segments, which, according to Braum, have had ample time to reappear.

The thymol was given in the usual way, either with or without salts the day before.

#### THREE CASES OF RHEUMATISM SUC-CESSFULLY TREATED WITH A NEW BACTERIAL DERIVATIVE.

In the *Indiana Medical Journal* for July, 1912, FOREMAN reaches these conclusions in regard to phylacogen:

- 1. The phylacogen should be administered subcutaneously in 5- to 10-Cc. doses daily, disregarding the reaction, until the patient is entirely relieved.
- 2. Any case of true rheumatism, whether acute, subacute, or chronic, should yield to this treatment, so far as the rheumatism infection, or associated infections, may be causative factors.
- 3. Heart conditions complicating acute and chronic rheumatism are much improved and become amenable to treatment as the patient recovers from his rheumatic symptoms.
- 4. The number and size of doses required to relieve any given case of rheumatism are governed entirely by the peculiar individual character of the patient, each case presenting its own indications.

The use of phylacogen in the treatment of rheumatism presents a very interesting study, and it is to be hoped that the future experience in its use will bear out the conclusions based upon the flattering results as set forth in the above cases.

# HIGH-FREQUENCY DESICCATION: ITS USES AND LIMITATIONS IN SURGERY AND DERMATOLOGY.

Under this caption CLARK in the Month-ly Cyclopedia and Medical Bulletin for August, 1912, reminds us that the desiccation treatment of neoplasms was presented to the Philadelphia County Medical Society February 8, 1911. Since that time many additional clinical tests have been made. At the present stage of its development the uses and limitations of this method are more clearly defined, and therefore a second report seems justifiable at this time.

Desiccation of living animal tissue is an effect produced by the proper application of an accurately measured electric current of high tension. For superficial destruction,

no bare electrode comes in direct contact with the tissue, but the current from one pole is concentrated and thrown from a metal point through an air space to the tissue in the form of sparks of great frequency, the other pole being grounded. For deeper destruction, the bipolar method is used; the metal point is brought in contact with the tissue, and the large passive electrode is placed at some indifferent part of the body.

A static machine of large output (2.5 to 3.5 milliamperes) is used to produce the initial current, which is stepped up by a carefully measured capacity (0.00042 microfarads to each Leyden jar) and an accurately attuned resonator. The current from a coil or any magnetic device will not produce the desiccation effect on account of the interruptions in the primary; and as no discharge can be transmitted to the body until such interruption occurs, the current is delivered in a series of hot discharges, which renders the thermic degree inconstant and the impact against the tissue painfully severe. A steady flow of current, as is procured from the static machine, is necessary, but it must be of large output and subject to perfect control, or it will fall short of the desiccation point.

Desiccation should not be confused with fulguration, or with high-frequency cauterization and coagulation. The first devitalizes by drying the tissue, the second shocks and produces hyperemia, but does not destroy, and the third is essentially the same as the ordinary cautery, though perhaps deeper in effect. It is possible with the same apparatus, by attaching a controlling device, to produce all thermic degrees ranging from hyperemia to cauterization. The desiccation spark is not hot enough to carbonize, but of sufficient heat to cause rapid dehydration of the tissue, rupturing the cell-capsule and converting the area treated into a dry mass. It has the power of penetrating into the tissue from a small fraction of an inch to one inch or even more, depending upon the frequency, distance of the electrode from the body, time of exposure, and density of the tissue. Not only can an area the size of a

pin-point be desiccated without infringing upon the normal tissue, but a growth of considerable size may be destroyed by one application, though this is not always desirable. Desiccation destroys tissue without opening blood or lymph-channels, and will act as a styptic when there is oozing of blood. It sterilizes all tissue upon which it acts directly, as has been shown by careful experimentation with cultures taken before and after treatment. The desiccated tissue acts as a foreign body, and a positive chemotaxis is promoted, which probably accounts for the rapid repair. The dry crust which forms acts as a natural dressing, and separates in from three days to one week. Regeneration of skin or scar tissue usually takes place underneath the crust. The procedure is not very painful if applied with correct technique. In supersensitive individuals a local anesthetic is employed, either by topical application, in the case of mucous membranes or ulcerated surfaces, or infiltration, when the area is covered with skin -although the latter is never practiced when there is a suspicion of malignancy, the ionic diffusion of cocaine being preferable. In rare cases a general anesthetic is required.

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In the more important conditions for which desiccation is applicable, its use and limitations are as follows:

Warts and Moles.—These are usually destroyed with one application. A dry crust at once forms, which separates and falls off in from three days to one week, depending upon the size of the area destroyed. Regeneration of skin takes place underneath the crust. The slightly red area gradually fades to normal color. There is no contracture as from a burn, and the cosmetic effect cannot be improved upon by any other method. There is no doubt about the wisdom of removing these lesions for other than cosmetic reasons, as it is a well-recognized fact that sometimes cancer has its starting-point in an apparently innocent wart or mole.

Pigmentations, Vascular Nevi, Angiomata, and Tattoo Marks.—The results in these conditions have been very satisfactory. It is advisable to complete the destruction if possible at one sitting, unless the area be very large, when a number of different applications may be necessary. When these lesions are superficial, new skin is formed; if deep, scar tissue or a combination of skin and scar tissue. The cosmetic effect depends upon the depth of destruction. Care should be taken to destroy the tissue perfectly evenly, and not too deeply, as there may be cupping, irregularity of surface, and, if the spark is not too hot, even a keloid. This may be avoided, however, by careful technique.

Chronic Varicose Ulcers.—Exuberant granulations are desiccated, after which ordinary methods, such as strapping and the silver-nitrate stick, are employed. Several cases which had resisted ordinary methods of treatment healed quite rapidly after the granulations were desiccated.

Acne.—An attenuated spark is used, of the same type as above, but not carried to actual destruction. The primary effect is local anemia, which is followed by an intense hyperemia. This method is very effective when used in conjunction with proper constitutional treatment.

Neoplasms in Some Hollow Viscera—Bladder.—Using a catheterizing cystoscope, an insulated wire may be passed through the instrument, the bladder being inflated with boric acid solution or sterile water, and tumors readily destroyed by desiccation. When this current is passed through fluids, the intensity should be slightly increased and the wire brought in direct contact with the growth. This work may, however, be done by high-frequency cauterization, as has been reported by various writers during the past year.

Rectum.—Using a special air-inflation proctoscope, through which an insulated wire is passed, growths may be reached and treated by desiccation for a considerable distance up the rectum, including papillomata, ulcerations, cancer (for palliative treatment), and hemorrhoids, if for any reason operation is refused or contraindicated.

Larynx.—In suitable cases tumors of the

larynx may be destroyed by desiccation. The laryngoscope or ordinary laryngeal mirror is employed to expose the interior of the larynx, and the current applied by means of an insulated wire carried like a laryngeal applicator.

Eye.—Desiccation may be applied to the conjunctiva in trachoma, dry granular conjunctivitis, and epitheliomata, and to the cornea for ulceration and pterygium. There is no danger in working near the eye, as the control of the desiccation current is absolute.

Cancer.—Clark is inclined to the belief that, if cancer cannot be destroyed or removed in its entirety at once by any method whatsoever, it had best be left untouched. This does not apply to such agencies as the x-ray or radium. How often has a slowly growing, mildly malignant cancer been seen quickly to recur and progress with great rapidity after an incomplete operation, with no method known to science able to stop its ravages! The conviction that cancer must be treated radically or not at all is now his guide in giving advice in the treatment of this condition.

In epitheliomata which, in Clark's judgment, appear to be superficial, desiccation is employed alone, to the exclusion of the curette or scalpel. The destruction is rapid and complete. The fact that blood-channels are not opened appeals to him, and he believes that for this reason metastasis is less likely. Results in this class of cases have been so satisfactory that up to the present other methods of treatment have been discarded. In advanced eiptheliomata, where there is deep involvement of tissue, but no granular involvement, curettement is advised, or thorough excision carried considerably beyond the diseased area, followed immediately by desiccation. This seals the blood-channels, and it is hoped that the cancer-cells not reached by the scalpel or curette are destroyed. A course of x-ray treatments following desiccation is advised in these cases. The dose should be massive, killing, not stimulating, and as frequently applied as is consistent with safety; but the rays should be applied only by an experienced operator, according to Clark's experience, as he has seen cases which seemed to have been stimulated to rapid recurrence by what appeared to be improper dosage.

#### FORCIBLE FEEDING OF THE INSANE.

In concluding an exhaustive article on this topic in the *Medical Chronicle* for August, 1912, STANLEY reaches these opinions:

- 1. Refusal of food is a serious symptom occurring in many forms of insanity, and it necessitates, if persistent, the adoption of forcible measures.
- 2. It is essential that these measures should be instituted early, before the bodily health of the patient has become impaired.
- 3. By far the most valuable method at our disposal is to feed by means of a tube passed into the esophagus through the mouth as far as 13 to 14 inches from the teeth; or in certain circumstances through the nose.
- 4. The dangers attached to tube feeding have been much exaggerated. The writer's observations show that, provided suitable appliances and diets are employed and reasonable care exercised, there is no danger of causing mechanical injury to soft parts or producing disorders of the digestive tract.
- 5. The only serious danger to be apprehended is aspiration pneumonia, and the risk of this complication is slight if care be taken to avoid the tube with patients in an unconscious or semiconscious condition.
- 6. The only practical contraindications to tube feeding are unconsciousness or local conditions such as growth, inflammatory lesions, or injury due, for instance, to corrosive poisoning which necessarily render the passage of the tube dangerous. In these latter conditions other measures of forcible feeding, such as rectal alimentation, should be adopted, but they must be regarded as merely temporary expedients.
- 7. The diets recommended as suitable for tube feeding are as a rule highly deficient in carbohydrates. The writer believes that an ample supply of carbohydrate is essential, especially for the more acute cases of insanity, and he has found that glucose is the

most convenient and satisfactory form to employ.

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8. The writer believes that his observations prove that insane patients can be kept in an efficient state of bodily health by tube feeding and that the risk attached to its employment is almost negligible, the increased mortality found in patients fed by the tube being explained by the more serious nature of the mental disease from which these patients are suffering.

#### DIARRHEA OF GASTRIC ORIGIN.

VANDERHOOF in the American Journal of the Medical Sciences for August, 1912, says that the essential point in the treatment of patients with the condition of gastric anacidity is the administration of large amounts of hydrochloric acid. The usual dose of 10 or 15 drops of the official dilute hydrochloric acid is inefficient. In these cases hydrochloric acid is not to be regarded as a drug. Its administration is for the sole purpose of supplying artificially a substance which the normal stomach secretes regularly and in good quantity. Not only is this acid indispensable for the activation of pepsinogen into pepsin, but on reaching the duodenum it serves as a hormone, or chemical messenger, to initiate the flow of pancreatic secretions. Futhermore, hydrochloric acid may be regarded in a certain sense as the most effective intestinal antiseptic. The only obstacle presented in the use of this acid is the difficulty of giving it to our patients in sufficient amounts. The mucous membranes of the throat will tolerate only weak solutions, hence the necessity of much fluid as a diluent. It is the custom of Vanderhoof, however, to prescribe 30 drops of the official dilute hydrochloric acid in a full glass of water one-half hour after meals, to be repeated again in one-half hour, or a total of 180 drops per day. On occasions, during the last year, Vanderhoof has substituted tablets of acidol for the mineral acid. This is an ingenious synthetic product, hydrochloride of betain, a substance derived from molasses in the manufacture of beet sugar. When dissolved in water, or in the stomach,

acidol gradually liberates hydrochloric acid. The only objection to the preparation is its cost, but it is much more palatable and convenient to carry about than the liquid acid.

In the effort to stimulate the glands of the stomach to resume their function the most efficient means at our disposal are the administration of strong meat broths as the first course of the meal, preceded by full doses of tincture of nux vomica. This drug should be pushed to its physiological limits, and patients may often take 30 to 35 drops at the dose. It might be argued that nux vomica may give rise to a gastric hyperesthesia, or aggravate such a condition if it already exists. The studies of Steele, confirming the previous experience of Musser, show, however, that nux vomica in full doses does not have such an effect, but relieves rather than increases the tendency to hyperesthesia of the gastric mucous membrane.

In addition to the drinking of broths, consomme, bouillon, beef tea, etc., these patients are encouraged to have their foods well salted, in order that the chlorine supply of the body be ample for the production of hydrochloric acid. If any restriction of the dietary is indicated, undoubtedly the proteids should be the class of foodstuffs to limit in amount. With diminished peptic digestion, associated with a possibly impaired tryptic activity, proteids are certainly not well handled, and their excess in the intestine permits of undue decomposition with the production of increased amounts of indol and other cleavage products which we believe to be injurious to the organism.

Buttermilk is a specially valuable article of diet in cases of gastric anacidity, and most patients can be induced to consume three pints a day. When they tire of it, or if it is not well borne, one of the various preparations of lactic acid bacillus tablets may be given.

If the general nutrition is much impaired, associated, as is usually the case, with visceroptosis and possibly motor insufficiency of the stomach, the patient will be much benefited by assuming the recumbent position for an hour after each meal, or he may

be instructed to lie on the right side. Further treatment may include the wearing of an abdominal supporter, and the employment of the usual measures to combat anemia, nervous states, and other conditions which may be not only the result but as well the contributing cause of a gastric anacidity.

### THE TREATMENT OF DIABETES MEL-LITUS AND ITS CURE BY DIET.

KOLIPINSKI says in the Monthly Cyclopedia and Medical Bulletin for August, 1912, that the treatment of the symptoms, minor lesions, and serious complications of this mysterious malady, diabetes, requires brief and practical discussion.

The symptoms most generally complained of—languor, weakness, thirst, hunger, and excessive urination by day and night—vanish in a few days with the appearance of normal urine.

The eczema, genital pruritus, and furunculosis disappear in a week or so.

It is a characteristic complaint of grave cases to be tired to death, or so tired as to wish for death, and this languor the patient does not observe to disappear as quickly as the polydipsia and polyuria. The use of drugs to relieve these acute subjective symptoms, and particularly the hunger and thirst, is most injudicious, and the praise given to the use of opium by writers of authority is to be deplored.

The carbuncle of diabetes mellitus, of all carbuncles, should never be operated upon by excision. Diabetic coma is always imminent. Far better is it to cure this infection of the skin by means of precipitated sulphur, applied as a powder into the points of suppuration, or ulceration, or used as an ointment with a cacao-butter base (1 to 8). Equally efficacious to render a carbuncle innocuous is the constant application of a compress wet with a solution of calcium creosote.

Extensive gangrenous phlegmons must be incised and then thoroughly dressed with the same applications.

Diabetic cataract, when in its incipiency, may clear up under the antidiabetic diet.

Albuminuria, where faint and incipient, may likewise entirely disappear. Where it is an essential part of subacute or chronic nephritis, an attempt to cure these may be made with a diet consisting of curds or schmierkase. When the albuminuria has practically disappeared, the artificial milk is added to these two foods. The artificial milk consists of a modified formula of a series of liquid foods imitating milk chemically, devised by the writer and described in the *Medical News*, New York, December 21, 1901. It is prepared as follows:

- 1 broken raw egg.
- 2 teaspoonfuls of malt extract.
- 4 teaspoonfuls of olive oil.

Beat up in a bowl with a spoon or egg-beater for five minutes. Add gradually while stirring 1 pint of drinking-water. Season to the patient's taste with table salt. In hot weather add crushed ice

Cows' milk cannot be used in treating diabetes or the succeeding nephritis. With a milk diet it is possible in the nephritis of diabetes to remove the urinary albumin entirely, as well as the dyspnea and anasarca, and very rapidly to increase the strength and weight of the patient; but soon after the glycosuria, previously very much reduced or for a time even absent, will reappear. With this the diabetic dyscrasia returns in its full intensity. A meat diet now produces a fresh albuminuria, the sugar again receding, and death finally results. It may occur as a result of both diseases—gangrene of a lower limb and uremia.

Milk has been allowed as a food in diabetes by many practitioners, and has been approved as proper in the diabetic form of nephritis, but not wisely, as it is agreed that the ingestion of lactose in diabetes increases the glucose in the blood. In the abandoned skimmed-milk treatment of Donkin, the singular error was committed of taking away useful food substances and allowing sugar of milk, a harmful one, to remain.

Gangrene, when superficial, heals spontaneously or with boric acid compresses or baths

Deep or complete gangrene of a limb gives a heavy mortality after operation. In such

cases the prognosis is always unfavorable unless the patient reacts to the proper diet, which alone can save the life that is in jeopardy. Gangrene, like albuminuria and all other complications, never appears where dieting has permanently rendered the urine normal.

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The pulmonary tuberculosis of diabetes is insidious, never chronic, rapidly fatal, with deep sepsis and enormous wasting of the body. Hemoptysis may be the first evidence of a disease already established. Equally as fatal as tuberculosis, and sometimes a part of it—at other times after a croupous pneumonia—is pulmonary gangrene. The antidiabetic diet always eliminates the grapesugar in the urine, but never retards the rapid progress of either of these diseases.

True glycosuria occurring in the course of typhoid fever requires no treatment until the temperature is normal and convalescence begins. The sugar, as is known, disappears in four or five days from the onset of the fever, reappearing when the disease has run its course.

Syphilis, secondary and tertiary, should be treated as in the non-diabetic. Antisyphilitics, like all other well-known remedies, have no power to alter the state of glycemia, and lues, present or past, or its treatment, neither aggravates nor mitigates the associated disease.

Beginning acidosis may vanish, and the acids and fat derivatives found in the urine in cases near to a fatal ending will likewise be removed together with the sugar under the influence of diet; but where great weakness, drowsiness, labored breathing, and beginning stupor herald the oncoming of diabetic coma, the case is a lost one. Perhaps the discovery of a suitable antidote for acetone and diacetic and oxybutyric acids in the blood, or of an eliminant, will eventually lead to success, or else, by transfusion or the introduction of enough water into the stomach to dilute sufficiently the poisoned blood, better results may be obtained than those now achieved; but as yet the coma of diabetes is still the most rapidly fatal of all the dangerous complications to which its victims are exposed.

### THE TREATMENT OF MYOCARDIAL DISEASE.

We are told in the British Medical Journal of August 3, 1912, that at the meeting of the British Medical Association this year Dr. G. A. Gibson opened a discussion upon the treatment of heart-muscle affections apart from valvular disease, laying stress on the importance of rest, sleep, air, and diet. In tachycardia he combines the use of small doses of digitalis with bromides, preferably with calcium bromide. In bradycardia of toxic origin strychnine and belladonna were useful. Colchicum he used in very large doses in cases of a gouty nature. Thyroid extract was indicated in the large heart of mild myxedema. Suprarenal extract was equally useful in Graves's disease. Professor Cushny confined himself to an account of the investigations at the Mount Vernon Hospital, which he had recently carried out in association with Dr. Mackenzie, upon the action of digitalis, squill, strophanthus, and apocynum. The tincture of digitalis had been found to be the most reliable of these. The preparation used was highly constant, and when standardized varied only within 10 per cent of the normal. In dilution with water the effect of strophanthus was rapidly lost, and there was considerable danger of overdilution in prescribing. The effect of strychnine, he believed, was most apparent in vasomotor paralysis. Dr. Dixon referred to the association of cardiac degeneration in cases of pituitary disease. In a case of acromegaly upon which he had recently seen a necropsy performed the heart weighed 3 pounds. Dr. John Hay had found chloral of immense use. He believed that the danger of this drug had been exaggerated.

### COMPARATIVE METHODS FOR INDUC-ING ANESTHESIA.

At the recent meeting of the British Medical Association an animated discussion on this topic took place.

Mr. Leedham-Green opened the discussion on the comparison of methods employed for inducing anesthesia and analgesia respectively, with special reference to after-

effects. He said it was difficult to get reliable statistics as to mortality owing to the multiplicity of drugs, combinations, and methods employed. On the Continent the mortality was given for ether as 1 in 5000, for chloroform 1 in 2000. For spinal analgesia Strauss had estimated the mortality as 1 in 2000: enthusiasm for this method was Chloroform was more toxic declining. than ether, and particularly affected the myocardium, stomach, liver, and in less degree the kidneys. The injurious effects of ether were more pronounced on the lungs. Local infiltration analgesia was entirely devoid of danger, and he urged its more general adoption in the debilitated.

Dr. Ehrenfried read a paper on the intratracheal insufflation of ether, and demonstrated an apparatus he had employed which combined the advantages of Elsberg's with the greatest simplicity, portability, and cheapness. In using it the movements of respiration were entirely superseded by the mechanism of the apparatus, which was worked by a foot bellows. Mr. R. E. Kelly demonstrated a modified Elsberg apparatus in which the chief difference was that the air was warmed after taking up ether vapor instead of before. It was worked by electricity. He had used it in 35 cases, and allowed a slight respiratory rhythm to be maintained. In addition to its value in intrathoracic cases it was a useful method in operations on the upper air-passages, and in cases of intestinal obstruction, as aspiration into the trachea was rendered impossible.

Dr. Armstrong of Montreal said he had introduced the intratracheal method in his hospital and had experience of 70 cases; he was extremely satisfied with it, and considered there was less after-vomiting; there had been no cases in his practice of injury to the trachea due to the presence of the catheter.

Dr. Thompson Rowling read a paper on the administration of vapors of ether and chloroform with oxygen, and demonstrated his apparatus whereby definite percentages of these vapors, alone or in any required combination, might be given. He thought that the alternation of chloroform and ether during anesthesia tended to obviate postanesthetic poisoning.

Mr. H. M. Page advocated the use of Crile's nasal tubes, not only for ether but for chloroform. He connected them with the Vernon-Harcourt inhaler for this purpose, and had an attachment for the administration of oxygen at the same time.

The President complimented Mr. Leedham-Green on the manner in which he had dealt with a knotty subject. He had dealt out even justice as between analgesia and anesthesia: it must, however, be remembered that mortality rates for anesthesia were derived from the practice of all classes especially on the Continent, where the adwere non-expert-whereas ministrators spinal analgesia was almost entirely in the hands of distinguished experts. The dosimetric administration of chloroform was unfortunately not always practiced; with Dubois's and Vernon-Harcourt's apparatus the death-rate was nil. Anesthetists, before attempting to adopt the intratracheal method, should familiarize themselves with the apparatus and acquire facility in passing the intratracheal catheter. Rectal administration of ether had been mentioned as though it were a new thing, but he introduced it twenty years ago with success.

Mr. Leedham-Green, in reply, said he was skeptical of the advantages of intravenous ether. He considered the intratracheal method liable to traumatic ill effects, and objected to the noise made by the motor in Elsberg's apparatus, which, however, he considered would be of great use in the severer intrathoracic operations.

Mr. F. W. Bailey discussed the employment of alkaloidal bodies prior to inhalation, infusion, or subdural injection, with a view to abrogating deleterious after-effects. He said that they were all straining to reach perfection in the production of anesthesia. Having dealt with the physiological effects of the alkaloids usually employed, he expressed a preference for the use of atropine and morphine only, and in small doses; the advantages were in the direction of quiet anesthesia with less anesthetic, diminished apprehension on the part of the patient, diminished salivation and consequent lessened

tendency to later pulmonary complications; postanesthetic pain, excitement, and vomiting were also diminished. He mentioned the contraindications. Mr. Hett dealt with the subject from the point of view of the nose and throat specialist, and in addition to the narcotic alkaloids referred to the use of cocaine in combination with anesthetics. Dr. Barton advocated the use of alkaloids as a routine, with certain exceptions, which he mentioned; the question of dosage was a difficult subject. Mr. Fielden thought cocaine was useful in eve operations and submucous resections. The effects of morphine were variable; some patients were particularly liable to vomiting after its exhibition. Respiratory depression caused by it was sometimes inconvenient where chloroform was the anesthetic. Dr. McCardie only gave small doses of scopolamine and morphine, and added strychnine in some cases to improve respiration. He thought increased oozing of blood was caused by alkaloids. . Mr. Carter Braine drew attention to the difficulty there was in estimating the precise degree of anesthesia present in patients who had been previously injected; he favored small doses. Dr. Beresford Kingsford objected to the use of cocaine when chloroform was to be the anesthetic; he did not always find that scopomorphine diminished the amount of ether required, and had experienced difficulty in obtaining abdominal relaxation. Dr. Fingland deprecated any preliminary injections. The President considered the method of great value on account of the diminished amount of anesthetic required, and consequent diminished after-effects: he insisted on the importance of quietude between the injection and the anesthetic; the combined alkaloids worked together in some respects and mutually antagonized their deleterious effects.

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Dr. A. G. Levy read a paper on a cardiac effect of adrenalin in chloroformized subjects. He gave an account of an investigation he had made on cats, and illustrated his remarks with lantern slides of tracings. His researches went to prove that the injection of adrenalin into the blood stream during very light chloroform anesthesia invari-

ably caused tachycardia and irregular rhythm, speedily followed by ventricular fibrillation and death; these results did not follow under deep chloroform or under ether anesthesia. The paper was discussed by the President, Dr. McCardie, and Dr. Ehrenfried. Dr. Levy replied.

Dr. R. E. Apperly read a paper on the effect of ether and chloroform on the liver and kidneys in health and in certain infective conditions, and illustrated his remarks with microscopical slides. He had experimented on rabbits, and drew the following conclusions: that chloroform caused greater damage than ether; that a short, deep anesthesia was more harmful than a prolonged light one; that previous glucose feeding was a valuable preventive.—British Medical Journal, Aug. 3, 1912.

### DELAYED DEVELOPMENT TREATED WITH THYMUS GLAND.

KERLEY and BEEBE, in the American Journal of Medical Science for August, 1912, report that in February, 1910, a mother brought her son, aged sixteen years and four months, to consult Kerley regarding what she termed "a failure of development." She stated that the boy had made no perceptible growth in over two years, that his genitals were small and undeveloped, and that the testicles were not in the scrotum. She was greatly worried, fearing that the boy would never be a man. Her statement further was to the effect that the boy was mentally sound, was active in play, and normal in mentality, as proved by his standing in school. He was in classes corresponding to other boys of his age.

Examination showed the boy to be delicate in appearance, normal in all respects excepting that he was undersized, his height being 56 inches and his weight 76 pounds stripped, both weight and height being about that of a boy aged eleven to twelve years.

The penis was small and shrunken, the testicles were very small, and although there was no retention and they could readily be brought into the scrotum, they rested in the canal a greater part of the time. There had never been an erection of the

penis, and there was neither pubic hair nor hair in the axilla.

The treatment instituted was that of lightening the school work, more hours in bed. and a suitable diet. Tincture nucis vomicæ, arsenic, and cod-liver oil comprised the medication. The patient was seen at about one-month intervals during the following nine months. At this time there was a gain of three pounds in weight. His height was the same, and there was no change whatsoever in the sexual development. The family were extremely troubled and requested that every effort be used in the boy's interest. At the suggestion of Dr. Beebe all medication was discontinued and desiccated thymus extract, 15 grains daily, was prescribed.

During the first six months of thymus administration the genitals, penis, and testicles perceptibly enlarged, and after nine months' use the first erection occurred when aged seventeen years and ten months. This was new and novel and amused the patient very much. At the completion of one year of treatment, when aged eighteen years, hair appeared on the pubis and in the axilla. He had gained one inch during the year, standing 57 inches, and had gained 11 pounds, weighing 87 pounds.

During the next six months, which brings us to April of this year, 1912, when aged eighteen years and six months, he had gained 2 inches in height, bringing him at the present time to 59 inches in height, and had gained 8½ pounds in weight, increasing the weight to 95½ pounds. The testicles have remained in the scrotum during the last six months. The voice changed in February of this year, when he was aged eighteen years and four months.

In the eighteen months under treatment there was a gain of 3 inches in height after he was aged seventeen years, and 19½ pounds in weight, when there had been no growth, according to the mother's statement, for two years and nine months before.

The sexual organs are apparently normal and well developed. The use of the thymus might be considered a coincident in a case of retarted development; such cases of late development, however, are most unusual. No claims are made for the thymus. The authors appreciate that one case proves but little.

Six other cases of slow growth or retarded development are under observation with thymus at the present time. These cases will be reported later and will help to establish the point that naturally will arise in the mind of the reader whether or no thymus was operative in the case reported or whether it is to be looked upon as a coincident, and that the phenomena observed would have taken place without its use.

#### TREATMENT OF MITRAL STENOSIS.

TAYLOR, in the *Practitioner* for August, 1912, states that in the early stages of the disease no special treatment is necessary, and beyond the cautions which we should give against prolonged exposure, severe exertion, or great mental excitement, a sufferer from mitral obstruction may follow an ordinary life, learn some business or profession, or even engage in manual occupation which is not too exacting.

It is not necessary to employ any medication having a special action on the heart and circulatory system, so long as compensation is fairly good and the central organ is doing its work efficiently. There is no use in spurring a willing horse. On the contrary, such a procedure may bring on disaster. And Taylor believes there are few more harmful things in meddlesome medicine than the constant stimulation by digitalis of a heart which is effectually performing its work.

It is when the heart is flagging, when the balance between effort and result is upset, that special remedial treatment is called for. Even then a long rest in bed, say for a month, will often restore a laboring heart to an efficient discharge of its work. The distended left auricle, the strained right ventricle, and the engorged pulmonary plexus of vessels between these cavities will, in many instances, recover their tone and circulation without any drugs. But the time comes, sooner or later, when compensation

fails, and more energetic measures are called for. Even then rest in bed is one of the best aids to recovery, although cardiac tonics may be requisite additions.

In the earlier stages of cardiac failure digitalis is the remedy. Many preparations of this valuable drug are placed before us; but until we have an official and standardized product, we are somewhat in the dark as regards effects and results, since a given preparation of the drug may vary considerably. So far as Taylor's own experience goes, the freshly made infusion is the most reliable. The remedy should be given in full doses for three or four days, while the patient is resting in bed, and its effect on the cardiac rhythm and force, as well as on the urine, carefully recorded. Good results are often thus obtained.

Convallaria majalis is also a remedy which should not be overlooked. It has certain advantages, in that it has no cumulative effect, and does not so readily produce nausea as does digitalis. It is well to commence with small doses (10 minims) of the tincture. Strophanthus is also a valuable medicine. In the form of tincture it may be prescribed in doses equal to those of the tincture of digitalis. It is especially valuable as a cardiac stimulant before edema has commenced. But for general usefulness in cardiac failure due to mitral obstruction, digitalis is by far the most powerful single remedy.

In many cases, however, there comes a time when the heart ceases to respond to any of these remedies when used singly. When such occurs, one may be agreeably surprised at the good results which accrue when all three, digitalis, convallaria majalis, and strophanthus, are combined. Taylor has records of not a few cases in which this plan of treatment has had remarkable results; although it must be recognized that when the patient has arrived at the stage when relief is only afforded by the exhibition of three such powerful remedies, a prolonged life must not be looked for.

Stenotic patients often, as mentioned above, have hemorrhage from the lungs. What should be done? Taylor advises that nothing be done to arrest the hemorrhage,

always provided it is not excessive. It is evidence that the patient ought to have been bled by the practitioner. Many cases regarded as acute edema of the lung are really cases of pulmonary engorgement due to mitral stenosis.

Our grandparents were habitually bled once or twice a year for all and sundry ailments: and cures, afforded by this treatment of heart disease, have been recorded. But as bleeding was performed for almost every form of heart disease, many died, although some recovered or were benefited. Medical science in those days did not permit of accurate diagnosis; probably the valve which was affected was not detected, and certainly the form of valve disease known as mitral stenosis was not recognized, or even dreamed of. But it was these very mitral stenotics who were relieved, and whose lives were prolonged by bleeding, although the doctor of that day did not know it. Therefore, Taylor would advise us not to throw away the lancet as a remedial measure. He has just now two patients under observation who are bled, from time to time, with marked benefit. It is a form of treatment which need not, and should not, be delayed until an advanced stage of the disease has been reached. It should not be adopted as soon as congestion of the bases of the lungs and signs of engorgement of the liver have been detected. Some physicians prefer to apply leeches over the region of the liver, and though excellent results accrue, he has not found this method of such service as is afforded by a direct relief of the venous tension by opening one of the median basilic veins. Further, if there is any cardiac valve lesion in which he imagines that surgery applied directly to the heart shall in the future be advocated, it will most probably be in mitral obstruction, fanciful though it may seem.

Speaking on what may be called the minor remedies in this disease, Taylor draws attention to the use of mercurial preparations, especially of calomel. It is a valuable drug during the later stages, when the liver is chronically congested, and the patient has slight icterus. It has not of late years been his practice to combine digitalis with calo-

mel as many authorities do. He has found that more relief is afforded if calomel (gr. ½ t. d.) is given for a week, to be followed by digitalis the following week. It appears that the latter drug is given a fuller opportunity to exercise its beneficial action, after the liver has been stimulated by the mercurial.

The above represents Taylor's experience in the treatment of mitral obstruction, and in conclusion he emphasizes the advice that in venesection we have the most valuable remedial treatment, supplemented by digitalis, which is the most powerful drug. In aortic regurgitation he seldom prescribes it, and only after full consideration. In mitral obstruction it may be given freely.

#### CHRONIC HEART DISEASE.

GREENE, in the New York Medical Journal for August, 1912, desires to emphasize these points:

- 1. An early diagnosis of cardiac insufficiency is absolutely essential to the patient's welfare.
- 2. Such early diagnosis necessitates a change in the general attitude of medical men with relation to the valuation of subjective symptoms and the determination of the symptomatic relationships of lesser cardiac dilatations.
- 3. A large group of chronically diseased individuals, usually classed as neurasthenics, while generally free from serious organic heart disease, are peculiarly lacking in heart-muscle tonus and possess extremely dilatable, symptom-producing hearts as a part of their fundamental and usually congenital defects in general bodily structure and function.
- 4. So little basis now remains for the retention of the term "neurasthenia" as descriptive of a concrete case, and such serious errors of omission result from its continued prominence in the field of chronic ailments, that it should be dropped from the literature of medicine, or be given its true valuation under a proper terminology.
- 5. The term "perfect compensation" in heart disease is a misnomer, and the patho-

logic events in such cases make it evident that there is a constant, more or less gradual but progressive limitation of the field of cardiac response, and periods must inevitably occur from time to time, long before the onset of emergent or gross symptoms, when appropriate therapeutic measures will support and aid the embarrassed and laboring heart, relieve suffering, and prolong life.

- 6. To make the symptoms of extreme cardiac exhaustion one's only justification for active therapy is both illogical and dangerous.
- 7. The recent studies of the causative agents and portals of infection in acute rheumatism, a better knowledge of the nature and means of detection of syphilitic infection, and the introduction of new agencies and better methods for the intensive treatment of lues, make both the avoidance and permanent cure of these conditions easier, and indicate the possibility of greatly limiting the large group of myocardial and aortic lesions of which they are the causative factors.
- 8. Chronic heart disease, though incurable, is wonderfully responsive to intelligent and properly timed treatment, and always benefited by such proper supervision and control as is indicated in the individual case and obtainable only through early diagnosis, tactful disclosure, and a well-balanced optimism.

### THE COMMONER CONTAGIOUS DISEASES OF CHILDHOOD.

HERMANN emphasizes the following points in the New York Medical Journal of August 17, 1912:

- 1. As practical sanitarians we wish to know how contagious diseases are usually spread, not how they may be occasionally spread.
- 2. It is persons, not things, that spread these diseases.
- 3. In the vast majority of cases the infection is due to contact, either with a recognized or an unrecognized case or a "carrier."
- 4. The spread of contagious diseases through the air, through desquamating

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scales, and through healthy third persons, not carriers, seldom occurs and for practical purposes may be neglected.

- 5. The disinfection of fomites, rooms, etc., is to a great extent unnecessary, especially as all infected individuals and carriers cannot be controlled.
- 6. The carrier represents the crux of the whole problem. It seems unlikely that this difficulty will ever be entirely overcome.
- 7. On account of the existence of carriers, isolation, disinfection, improved medical school inspection, and special hospitals, alone cannot have a marked influence on the reduction of morbidity.
- 8. This can be accomplished only by a method of temporary or permanent immunization against these diseases.

#### TREATMENT OF GASTRIC ULCER.

Sir Bertrand Dawson (British Medical Journal, Aug. 3, 1912), in opening a discussion on the pathogenesis, diagnosis, and medical treatment of gastric ulcer, said that he would consider gastric ulcer as "mucus ulcer" and "chronic ulcer." By mucus ulcer he denoted an ulceration of the mucous membrane. It was usually a subacute condition, tending to heal quickly and completely. Sometimes, however, it progressed rapidly into perforating gastric ulcer, or took on the characteristic of a chronic lesion. By chronic ulcer he understood a condition involving most or all of the coats of the stomach, usually appreciable by sight and touch without opening the stomach. Duodenal ulcer was included because the duodenum above the common duct was embryologically, functionally, and pathologically closely related to the stomach, and the problem on the two sides of the pylorus was the Mucus ulcers were the combined effects of lowered vitality or damage of the mucous membrane, and increased acidity of the gastric juice: the damage might be by local bacterial infection or toxins acting on the epithelial cells or on the lymphoid follicles, or by local hemorrhage or trauma. The clinical resemblance between mucus ulcer and gastritis was very close, and there might be no distinguishing features between them. Chronic ulcer differed clinically from the older descriptions of this condition, and the patient was nowadays more often a man than a woman. As diagnostic features he emphasized pain, tenderness, and acidity. X-ray examination showed that the motility of the stomach was sometimes enhanced.

The most important part of treatment was rest in bed, accompanied by a diet requiring little motility, and by treatment directed against the acidity-namely, by alkalies. He recommended operative interference if medical treatment failed after two months, if return to work led to recrudescence of the symptoms, if hyperacidity persisted, and if any evidence of stenosis intervened.

Professor Saundy thought that the diagnosis was often very difficult, and that all doubtful cases should be treated as though gastric ulceration existed. Rest in bed he considered of first importance; but the old starvation method was futile, and, as he had insisted for twenty years, feeding by the mouth could be started when the patient was first put into bed. Radiography was of limited value.

Professor Michell Clarke said that the most important advance in knowledge of gastric ulcer was the division into acute or mucus and chronic forms. He remarked on the importance of oral sepsis and the diagnosis from cancer.

Dr. William Hunter regarded gastric ulcer as almost invariably due to staphylococcal and streptococcal infection from the mouth. Treatment should be especially directed to the source of infection. Charles Miller dealt with the histology of the disease. Prof. Vaughan Harley had found hyperchlorhydria in nearly all cases. He emphasized the importance of accurate chemical investigations. Volatile acids were increased only if pyloric spasm or obstruction existed, and pepsin was always present in large amount. He believed drugs, especially bismuth subnitrate, were of great He considered gastroenterostomy should play no part in the treatment of uncomplicated cases.

# CORPUS LUTEUM EXTRACT: ITS USE IN GYNECOLOGIC PRACTICE.

BURNAM, in the Journal of the American Medical Association of August 31, 1912, reaches these conclusions as to extract of corpus luteum:

- 1. When given by the mouth, corpus luteum tissue of the sow, even in large doses, has little or no toxic effect on woman.
- 2. It affords us a valuable means of controlling the nervous symptoms which occur in so many patients at the time of the natural or artificial menopause, giving relief to most sufferers.
- 3. It is a valuable remedy in treating patients with insufficient internal ovarian secretion during the menstrual life. This class constitutes a very large number of women.
- 4. It is an excellent remedy to induce menstruation in young women suffering from functional amenorrhea. Those who are fat, in addition to regaining menstruation, usually, but not always, lose weight.
- 5. There would seem to be a possibility for the drug in cases of unexplained sterility and repeated abortions.
- 6. Extensive use should be made of corpora lutea from the cow, sheep, and other animals to determine if these extracts work more successfully than those of the sow. The ideal lutean tissue for any animal is doubtless tissue from its own species, but this cannot be obtained for the woman.
- 7. So far as it goes, Burnam's work strengthens his conviction that Fraenkel is correct in attributing menstruation to the internal secretion of the corpus luteum.
- 8. From clinical experience he is inclined to believe that the corpus luteum possesses different properties due to different channels. One of these substances causes hyperemia of the pelvic organs; another relieves nervous symptoms of a toxic character as at the menopause. It would seem that this product acts as a neutralizer, since even large doses of the lutean cause no disturbances of a toxic nature. On the other hand, the toxic results of intravenous injections of the lutean extracts as well as the nervous phenomena of menstruation show

that there must also be some toxic material present which is not absorbed from the stomach or intestines. All of these various substances may in the future be separated.

#### SPECIFIC CURATIVE ACTION IN AME-BIC DISEASE OF HYPODERMIC IN-JECTIONS OF SOLUBLE SALTS OF EMETINE.

Rogers, of Calcutta, in the British Medical Journal of August 24, 1912, tells us that in amebiasis the hydrochloride and the hydrobromide of emetine are equally useful, the former being the more soluble, while the latter requires about 2 Cc. of sterile water or saline to dissolve it. At first Rogers chiefly used 1/3-grain doses, but now very seldom employs less than half a grain at a time, and often gives as much as two-thirds, the equivalent of 60 grains of ipecacuanha, and has twice injected 1-grain doses subcutaneously without any vomiting or depression, but such a quantity is only required in extremely acute amebic dysentery. The salts can be safely boiled for a very short time, but it is better to dissolve them in sterile saline, or to boil the solution first and then add the emetic salt. He has arranged with Messrs. Burroughs & Wellcome to put up the drugs, both as tabloids and already dissolved in sealed ampoules, and Messrs. Parke, Davis & Co. are also supplying them in the latter form.

As to the value of emetine treatment in the differential diagnosis of amebic from other varieties of dysentery, he says the extraordinary rapidity with which very marked improvement follows the subcutaneous injections of ½-grain doses of emetine is of the greatest diagnostic importance, for cases of bacillary dysentery and other non-amebic cases of the presence of blood and mucus in the stools are not, in Rogers's present experience, materially affected by the drug, although it has done no harm in them. Thus, in a case of chronic bacillary dysentery complicating kala-azar, emetine injections had no effect, and the disease steadily progressed to a fatal termination. Again, Rogers was asked to treat with emetine a case of suspected amebic dysentery

with six to seven stools of blood and mucus daily. On examination the patient pointed to the cecal region as the seat of pain, and clinically he also thought the case to be probably amebic, so injected 1/2-grain doses of emetine hydrobromide daily for three days, without the slightest effect on the number or character of the stools. He twice examined the stools for ameba, with negative results, while cultures failed to separate any bacilli which would clump with either Shiga or Flexner serum. The rectum was then examined, and cancer detected high up. The failure of adequate subcutaneous doses of emetine to produce marked improvement within two or three days is, then, very strong evidence that the disease is not of amebic origin. This specific action of emetine salts in amebic disease alone is of the greatest interest and importance.

Ever since he was the first to recognize the frequent occurrence of amebic dysentery in India and to demonstrate that living amebæ are always present in scrapings of the walls of large tropical liver abscesses, the author has never doubted the pathogenic action of these parasites. In his experience, whenever active amebæ of the histolytica type, including the variety described by Noc and shown by Grieg to be the common one in India, have been found in dysenteric stools (and he has almost invariably found this form only), the disease has eventually proved amenable to full doses of ipecacuanha, if not too acute or far advanced. Still, facilities and time for the microscopic examination of the stools of the large number of dysentery cases which often have to be dealt with in the tropics are seldom available, so a simple and harmless clinical method of differentiating amebic from other forms, such as is now furnished by the emetine treatment, is clearly of the greatest practical importance, and will also lead to the early adoption of suitable treatment in those cases which prove not to be amebic in nature. Moreover, it will allow of more rapid advances in our knowledge of the distribution of the two great classes of dysenteries than can be furnished by the very limited number of workers available for bacteriological researches on this subject in the tropics. We may, perhaps, also hope to hear no more doubts as to the existence of amebic dysentery as a separate entity, such as were expressed in a recent editorial in a leading Indian medical journal.

We have, then, in Rogers's method of the subcutaneous injection of soluble salts of emetine a specific treatment of amebic hepatitis and amebic dysentery, which is so rapidly beneficial in the latter as to be also of great diagnostic value between that and other causes of the passage of blood and mucus in the stools. Yet, strange to say, this remarkable remedy—perhaps the most active specific in the whole range of medicine, not excluding quinine and salvarsan—has for long been thrown away by those who pinned their faith to ipecacuanha sine emetina.

#### THE RELATIONS OF THE CIRCULA-TION TO DRUGS.

GIBSON in the Lancet of July 27, 1912, says:

Let us for one moment look at the question of the action of drugs on vessels. Can we be certain that they act on muscle fibers directly, or through nerve endings indirectly? Adrenalin is believed to act on nerve endings, because it only, or mainly, causes contraction of vessels with sympathetic innervation, because it acts almost everywhere else where there are sympathetic nerve ends, and because it no longer contracts vessels after large amounts of ergotoxin, while stimulation of the vasomotor constrictor nerves loses effect at the same time. Digitalis, again, is held to act on muscle because it contracts muscles quite irrespective of the character of the nerves going to them, because it acts on many forms of muscles in large doses, and because it continues to contract vessels after ergotoxin has been given in quantities sufficient to prevent any adrenalin action or any effect from stimulation of the vasoconstrictor nerves. These questions involve what is after all simply a balance of probabilities, as is so clearly stated by Cushny.

The employment of thyroid extract in

myxedema is, thanks to the work of Mackenzie. Murray, and many of their successors, so thoroughly established as to require no remark. The influence of this potent substance upon the nutrition of the body must be explained by its action as a hormone. Whether it acts directly upon glands and tissues or indirectly through the intervention of the nervous system cannot at present be determined. Suffice it to say that it influences blood distribution and nutritive possibilities in the most powerful manner. From the practical point of view, while passing by its obvious uses in clear cases of myxedema and cretinism, I may mention the invaluable service which may be obtained from thyroid extract in several conditions which are apt to miss our attention. Many degrees of thyroid inadequacy are found about the climacteric period, or shortly afterward. They are often mistaken for cardiac troubles, as they are attended in many instances by breathlessness and palpitation, bradycardia, and (less frequently) tachycardia. Such symptoms. along with slight increase in bulk, are misleading. It has been my fortune to see very many patients answering to this description, and to find that by the employment of extremely small doses of thyroid extract complete disappearance of all the disturbances was attained. In youth again it is common to find lack of growth in both sexes. Occasionally we find children, and, still more, youths, stunted in growth but excellent in form. One such will never, so long as memory lasts, leave the upper surface of my cerebral palimpsest. The son of one of my medical friends was, in his eighteenth year, one inch below five feet in height. He had set his whole mind upon entering Woolwich, for which his one and only chance was just about six months ahead. The family turned to me in deep distress, as they felt that to obtain a growth of four inches in six months would be as great a feat as the addition of the proverbial cubit to the stature. By the employment of thyroid extract the youth grew seven inches in six months, and as he obtained one of the highest places in the examination for Woolwich, it was obvious that his cerebral functions

had been in nowise disturbed by the treatment.

Several instances of the same sort—not. however, quite so dramatic-have been under my care; to be quite frank, it must nevertheless be confessed that in some of these boys and girls even thyroid treatment absolutely fails to produce the desired effect. Another class of patient in whom we find thyroid extract invaluable consists in children and youths who manifest mild myxedematous features—they are not for a moment, however, to be regarded as cretinoid. In many of these young people, along with satisfactory growth as regards height, there is rather too much corporeal bulk and rather too little cerebral energy. Under thyroid treatment they become more slender, and the sluggishness of the intellectual processes entirely disappears. How these different conditions of hypothyroidism are brought about is often a complete mystery. The infections are in some cases responsible.

Ever since the observations of Oliver and Schäfer upon the suprarenal glands, their substance has been employed by Gibson as the most important remedy in the treatment of Graves's disease. Various mineral and vegetable substances have, in the past, been administered freely in this disease, and in more recent times the blood of dethyroidized goats has been largely used. The latter substance has in my hands, as in those of Murray, proved to be of about the same value as the pulvis Olympicus poured upon us by a racing car on a summer day. But in suprarenal extract we have an agent which may be stated fearlessly to have no rival in the management of this affection. Under its employment the rate of the pulse is reduced, the protrusion of the eyeballs disappears, the thyroid gland diminishes, the tremor, along with every other nervous symptom, vanishes, and the patient is restored to health in a way that we never see under any other method of treatment. No one who knows me will accuse me of aught but the most sympathetic attitude toward modern surgery; but this is one of the affections in which it is my duty solemnly to protest against the furor operativus

which, in this condition, is in the overwhelming proportion of cases absolutely unjustifiable. It is surely far more scientific, as it is certainly much more successful, to trust to the chemical messenger, or hormone, which has the power of regulating the glandular activity responsible for so much of the clinical picture in Graves's disease, than to risk doubtful surgical adventures.

As to the treatment of acromegaly, we are still on the threshold of inquiry. some early cases the use of pituitary substance has, in my hands, been remarkably beneficial; even in later stages, although the effects have not been so striking, much relief has been obtained from a number of the subjective symptoms, while the general condition has been kept stationary. There are, however, many cases-and these are especially of the myxedematous type already mentioned-in which the employment of thyroid substance furnishes the only means of amelioration. In those instances in which there are features suggestive of a concurrent Graves's disease, suprarenal substance (sometimes along with pituitary gland) is of real use. The action of the pituitary substance upon the blood-vessels has, by the way, since the researches of Oliver and Schäfer, helped enormously in the treatment of certain conditions where the arterial pressure has a tendency to fall. In many instances of pneumonia and other acute diseases apt to be accompanied by fatal fall of arterial pressure, the hormone obtained from the posterior lobe of the pituitary gland is of the greatest use. Did time permit, it would be a matter of the highest interest to point out that, during the menopause, many-sometimes all-of the troublesome symptoms then experienced may be removed, or at least relieved, by ovarian substance, while analogous effects are obtained during the corresponding period in men by didymin.

The new conceptions of Addison's disease have, as has been already shown, greatly widened our knowledge of suprarenal functions. We recognize that, as the result of many factors, the suprarenal bodies may be deficient in function. It is certain

that pyrexia, from the most varied causes, can abrogate the functions of these glands and bring about even fatal diminution of arterial pressure. In many of these conditions we now recognize that the use of suprarenal substance, or of adrenalin, will bring about recovery, through supplying the necessary hormone, until the glands are able to resume their functions. In a very large number of affections, therefore, it is absolutely necessary to have recourse to such modern methods of treatment. Of an excess of suprarenal secretion we at present know little or nothing; but a suspicion, first voiced by Russell, that overaction of the suprarenal bodies may be responsible for certain cases of arterial degeneration must be referred to, and as the treatment of such cases by means of thyroid substance largely antagonistic to suprarenal secretion -has been followed by excellent results, the suggestion appears to be well founded. The experimental production of arterial degeneration in rabbits is a matter requiring further research.

#### MERCURIC SALICYLATE INTRAMUS-CULAR INJECTIONS IN SYPHILIS.

In the New York Medical Journal of July 27, 1912, WOLLHEIM concludes as follows:

- 1. That with the insoluble mercury suspensions we can never hope for one hundred per cent absolutely painless injections, because of the drugs and their causing indurations, which are painful in the extreme.
- 2. That these indurations, as a rule, are made more tolerable by quinine and urea.
- 3. That quinine and urea certainly alleviates in many cases, or entirely obviates in some, the pain and discomfort of most of the mercury salicylate suspensions.
- 4. Quinine and urea is non-toxic and non-habit-forming, does not affect the therapeutic action of mercury on syphilis, and is of distinct advantage when added to suspension.
- 5. That from these observations in over 700 injections, the subject is promising for further research.

# THE CONTINUOUS EXHIBITION OF ALCOHOL.

Blumenfeld in the New York Medical Journal of July 27, 1912, asserts that alcohol is beneficial in continued doses as:

- 1. A cardiac stimulant in all conditions showing signs of heart failure.
- 2. As a stimulant, whipping up the vital powers to stand a strain of short duration.
- 3. As a digestant, by increasing the gastric and pancreatic secretion and improving the appetite.
- 4. As a food, because it is itself assimilable and aids the assimilation of other foods. It is used in combination with milk or egg. By this action it prevents death from asthenia.
- 5. As a tonic in convalescence from acute diseases in the form of wine; a wineglassful after meals.

# SALINE SOLUTION IN EPIDEMIC DIARRHEA.

MACKENZIE in the British Journal of Children's Diseases for August, 1912, reaches these conclusions:

- 1. Collapse in epidemic diarrhea is due to low blood-pressure and accumulated toxins.
- 2. The results obtained from injecting fluid are increased blood-pressure and the passage of those toxins.
- 3. The price of isotonic plasma prohibits its use among the poorer classes, while in saline solution we have a highly satisfactory substitute.
- 4. Subcutaneous injections of saline solution should be resorted to on the earliest indications of collapse, and in the case of very young infants at the first visit, whether collapsed or not.

#### THE FATE OF SYPHILITIC PATIENTS.

Under this title the Medical Record of July 13, 1912, comments on Dr. Marie Kaufmann-Wolf's contribution to the Zeitschrift für klinische Medizin, vol. 75, Nos. 3 and 4.

Fleiner described twenty-one cases of "occult" syphilis in women—that is, the

tertiary stage of the disease without any history of the primary or secondary evidences of it. Of these twenty-one, nineteen were traced by Dr. Kaufmann-Wolf twenty years later; as many of these women were married at the time or married later the fate of forty-five persons altogether, most of them surely and a few possibly infected with syphilis, was studied.

Five of the women died, the cause of death being bronchiectasis with syphilitic tracheitis, "dropsy," syphilitic cerebrospinal meningitis, pneumonia, and tabes dorsalis. These causes, of course, show what intimate connection syphilis had with the death of these patients. Ten of the men died, the causes of death being apoplexy in three cases, pneumonia in two, cardiorenal disease in one, tabes dorsalis in one, "dropsy" in one, and accident in the remaining two. The striking thing in this mortality is the frequency of disease of the circulatory system (apoplexy) as compared with the late syphilitic manifestations in women. Many of these deaths occurred under circumstances in which autopsy could be had, so that the diagnoses represent much more exactly the true state of things than is usually the case.

It was also shown that though quite thoroughly treated, according to the general hospital and dispensary standards, these patients were later capable of infecting their husbands or wives, gave birth to children in whom the mortality was much above the average, and also showed much higher than the average number of abortions and still-births. Sterility, too, was very common among them.

The results of this study are not very gratifying. They show how little our old methods of treatment were really curative of the disease when carried out among the dispensary and hospital patients, and this fact is quite in keeping with the laboratory evidence given by the frequent presence of a strongly positive Wassermann reaction in patients presumably well treated.

Salvarsan, of course, is the new factor which may change the state of affairs. It

may be that repeated injections of this remedy, which certainly can be made within a much shorter period of time than the treatment with mercury requires, will give better results in the future. The chief heed is careful observation and registration of results, which heed was quite generally neglected in the first enthusiastic use of the One hundred cases of syphilis remedy. treated with salvarsan, and carefully observed for a long time, are better subjects for publication than the thousands in which one or two injections produced regression of symptoms and which have been talked of ad nauseam in the recent medical literature.

# RADICAL TREATMENT OF CANCER OF THE DUODENAL PAPILLA.

KAUSCH (Beiträge zur Klinischen Chirurgie, 78 Bd., H. 5) on the basis of having seen four cases of carcinoma of the papilla of Vater, the last three of which were subjected to operation, contributes an admirable study of this subject. The first case exhibited symptoms of a choledochus obstruction, for the relief of which there was done first a transduodenal exploratory incision and thereafter a cholecystenterosto-Death followed on the fourth day from intestinal hemorrhage and collapse. A cylindrical-celled carcinoma was found at the ampulla without metastasis. The patient was forty-six years old and exhibited symptoms of invalidism for two years, beginning with violent abdominal pain and vomiting, followed by apparently complete recovery. Thereafter occurred jaundice without other symptoms, which became progressively worse.

The second case, exhibiting obstruction, was first subjected to the operation of chole-cystenterostomy; six weeks later duodenal resection, closure of the pylorus, gastroenterostomy, and a pancreatic duodenostomy. Three-fourths of a year later he developed cholangitis and choletoxemia, for which cholecystostomy was performed. The patient died the same evening, and examination showed stenosis of the cholecystenter-ostomy opening, but no recurrence and no

This patient was forty-nine metastasis. years old and gave a history of recurring gastric fever for many years. cently he had stomach-ache followed by loss of appetite, constipation, and emaciation; thereafter increasing jaundice, but without pain or vomiting. The first operation, performed under chloroform, supplemented by veronal, scopolamine, and morphine, was a cholecystenterostomy, the tumor having been located at the papilla after having mobilized the duodenum. The Murphy button was used for the anastomosis. a portion of the gut being chosen about 50 centimeters from the duodenojejunal junction. An enteroanastomosis was performed 10 centimeters lower than this, between the proximal and distal gut loops, by means of a Murphy button of medium size. The second operation was performed about two months later. The cholecystenterostomy had completely contracted, since the gallbladder was large. The enteroanastomosis was wide enough to admit the finger. The region between the gall-bladder, common duct, and transverse colon was practically free of any adhesions. The descending portion of the duodenum was bluntly dissected to the posterior papilla, this being easily done. The stomach was cut through in the region of the pylorus and closed. Gastroenterostomy was done. From above downward the duodenum and head of the pancreas were loosened and removed. Over the pancreas stump the distal end of the duodenum was stitched. The operation lasted four hours. Eleven centimeters of the duodenum were resected. In the region of the papilla was a cylindrical-celled carcinoma. A lymph gland also excised was not cancerous.

Convalescence was somewhat stormy, drainage having been used. There was an enormous discharge of carmine given by the mouth through a fistula. Secondary suture was employed because of the gaping wound. Though finally it healed the patient never regained complete health, remaining somewhat jaundiced. The jaundice gradually increased and pains developed, together with an increase in liver dulness and fever and subcutaneous bleed-

ings. Under anesthesia with morphine the belly was opened. The gall-bladder was found to be infected and filled with foul material. The autopsy showed normal pancreas and narrow cholecystenterostomy opening, and feculent gall-bladder contents. The histologic diagnosis was chronic interstitial pancreatitis.

The third case, one of choledochus obstruction treated by cholecystostomy and cholecystenterostomy, died of exhaustion. The fourth case, one of chronic choledochus obstruction, refused operation.

Kausch has succeeded in collecting 19 cases of carcinoma of the papilla subjected to operation. The usual type is cylindrical-celled, growing of course from the epithelium. It causes a projection of the mucous membrane, but no ulceration, death occurring before this develops.

As to the operation, of 19 cases two subjected to the two-stage survived the operative procedure. Of the 17 subjected to onestage operation, nine died in periods varying from one day to eight weeks. Of 10 cases which survived the radical operation, one died in three-fourths of a year from a complication. It is possible to record only one case as radically cured, and that a case of Körte's. In eight cases in which the papilla alone with its surrounding tissues was removed four died of the operative procedure, one from recurrence, and three are still living. Of nine cases in which the papilla with a portion of the duodenal wall was removed, this portion, including all the thicknesses of gut, a portion less than onehalf the circumference, was taken away. Once the approach was retroduodenal, six times transduodenal. Six died of the operation, and two of a recurrence. In two cases of circumscribed duodenal excision involving a large area of duodenum, but not a circular resection, one patient died of recurrence and the other almost immediately. Of two cases of circular resection, one died immediately following operation and one about nine months after closure of the cholecystenterostomy.

Kausch regards carcinoma of the papilla as relatively benign, since its presence is early denoted by the development of icterus,

and since metastasis develops late. He holds that the operation should be done in two stages—the first being devoted to the cholecystenterostomy and an anastomosis and to suturing the choledochus; the second to removal of the tumor accomplished by a transverse section of the duodenum, gastroenterostomy, closure of the pylorus, removal where needful of a portion of the head of the pancreas, and union of the duodenum to the stump of the pancreas. Providing the duodenal stump be too short for this, then the loop of bowel utilized for the cholecystenterostomy should be used. This operation is applicable not only to resection and total extirpation of the duodenum, but also to resection of the head of the pancreas.

#### CRYPTOGENIC SYPHILIS.

LANE (Lancet, June 15, 1912), writing on this subject, the title of his paper being "Syphilis D'Emblee," alludes to two cases described by Jullien. Two medical men, a surgeon and his assistant, operated on a woman of thirty-two for a tubercular swelling of the sternum. After excision and scraping they proceeded to sew up the wound. The needle, however, was a blunt one, and the surgeon in trying to force it through the skin wounded himself deeply on the end of the right index-finger by a cut which bled somewhat freely. Subsequently the assistant met with a similar mishap, and wounded himself on the same finger. In both instances the puncture was healed in three or four days. On dressing the patient's wound for the first time eight days later they observed a slight ulceration with red edges at the seat of each suture, which suggested the possibility of syphilis to them, and on the following day a general macular eruption manifested itself on the patient. On examining her genital organs a healing chancre was discovered on a level with the fourchette and also some enlarged inguinal glands.

Twenty-six days after the inoculation the surgeon had a feverish attack with a temperature of 103° F., shivering and sickness, and had to remain in bed for a day. At the

same time the site of the needle wound became sensitive, the end of the finger became swollen, and a slight ulcer appeared; this was followed on the thirtieth day by a macular eruption, and a week later by mucous patches on the scrotum and tongue; subsequently the syphilis pursued its ordinary course without any severe symptoms. The assistant had no sign of infection before the thirtieth day, when he also had an attack of fever, and though no changes appeared at the seat of inoculation a macular syphilide showed itself on the thirty-third day.

In commenting on these cases Professor Jullien draws attention to the early date at which the blood of syphilitic subjects becomes infectious, before the appearance of any secondary eruption, and even before that of the initial lesion. The evolution of the disease was considerably modified by this direct infection of the blood stream, and one phase of the disease was absent, viz., the local enlargement of lymphatic glands, though the general adenopathy characteristic of constitutional syphilis manifested itself later.

Lane further calls attention to the frequency with which medical men become infected without any knowledge of either the source of infection or its seat of entrance. Lane particularly insists upon the use of gloves in the examination of patients, and the immediate application of calomel ointment to any abraded surface contracted during an operation. It should be energetically rubbed in. He further notes that no matter how careful the surgeon may be, it is apparently impossible for him to make a certainty of escaping from this mysterious form of syphilitic infection.

# THE PROGNOSIS IN PROSTATIC DISEASE.

LILIENTHAL (American Journal of Surgery, June, 1912), basing his conclusions on a large clinical experience, states that clinically large, soft prostates are rarely malignant, while the small, stony-hard ones are much more apt to be so, and refers to a case giving prostatic symptoms with re-

tention of the urinary flow, where, though there was hardly any visible or palpable tumor present, carcinomatous infiltration was present, the vesical neck having ceased to functionate because of extreme fibrous rigidity. He prefers the suprapubic approach and holds that unless the patient is actually moribund no one who suffers from the effects of prostatic enlargement should be denied the hope of the relief afforded by surgery.

The operation should be undertaken as soon as the patient consents once the diagnosis has been made, and it should be remembered that in prostatic disease the possibility of carcinoma is ever present.

#### TREATMENT OF ACNE BY VACCINES.

Under this subtitle Bowen (Boston Medical and Surgical Journal, June 20, 1912) gives a résumé of the comparatively recent contributions of Morris and Dore on this subject. He states that they are among those who have failed to be convinced of the great advantages of this method of treating acne. There has been a great difference of opinion as to the acne bacillus, not only with regard to its cultural and morphological properties, but as to the exact rôle that it plays in the etiology. For this reason they truly say that the employment of vaccines in this affection must be looked on as in great measure empirical. The acne bacillus was discovered by Unna in 1893, and the bacilli later described by Sabouraud, Gilchrist, Halle and Civette, and some others are regarded by the writers as probably the same organisms, although there are many apparent discrepancies. The suppuration of the comedo is believed by some to be due to the bacillus of acne, to others as due to staphylococci, the bacillus producing only the comedo. The writers think that the evidence that the bacillus produces pus is very strong, and that in cases in which the staphylococcus predominates. the "effects of the bacillus are overshadowed by those of the more active staphylococcus."

After passing in review the therapeutic findings of other observers, many of whom

claim very great value for this method, the writers state their own conclusions. They cannot agree with those who have considered acne bacillus vaccine as one of the most brilliant therapeutic agents in dermatology. Their extensive experience with this method has led them to form a very moderate view of its efficacy. They do not at all recommend it as a routine treatment in this affection, but consider that it should be reserved for carefully selected cases.

Three classes of cases are cited that may be considered sometimes suitable for this method of treatment. First, cases in which there are severe, deep-seated pustules, which cover a considerable area, in which there are numerous microörganisms present, the staphylococcus in very large amount, the acne bacillus but sparingly. In these cases a staphylococcus vaccine is indicated, but it must be used over a period of months and is not a substitute for either local or the ordinary constitutional treatment.

The second group is that in which the lesions are indolent and superficial, consisting chiefly of inflamed comedones that do not usually become pustular. In these cases they have found the acne bacillus vaccine effective, but only in a "reasonably large proportion" of cases.

The third group is made up of those cases that combine the two previous groups, and here mixed vaccines of acne bacillus and staphylococcus are to be used. In the two latter groups, as in the first, all the ordinary rules for the management of acne, such as attention to circulatory and digestive disturbances, the diet, constipation, and plugging of the ducts, must be carefully followed. Local measures of stimulation and disinfection should be observed.

The writers think that autogenous are, on the whole, superior to stock vaccines, although in cases in which the acne bacillus vaccine is indicated, as in the second class of cases, it is better to use a reliable stock vaccine on account of the difficulty of cultivating this bacillus. Their best results in this group were obtained by a stock vaccine in doses of from five to ten millions, every

week or ten days. The opsonic index may be disregarded.

In conclusion, they state that their experience indicates that vaccine treatment should be regarded only as a useful adjuvant of the usual methods. There are occasional brilliant results, but there is a great tendency to relapse; the treatment must, as a rule, be carried out for a long time, be combined with other methods, and it cannot be shown to produce immunity.

#### TREATMENT OF DUODENAL ULCER.

ALBU (Die Therapie der Gegenwart, Jahrg. 53, Heft 6) holds that there can be no doubt that ulcer of the duodenum is much more frequent than formerly supposed. That the affection escapes notice is due to the extraordinary difficulty in diagnosis which it presents. In the case of the surgeon the exact diagnosis is established only by opening the abdomen. For the internist the problem is still more difficult. One cannot depend, as Moynihan claims to do, upon the history of the case, because the majority of the subjective symptoms also occur in other conditions. One must seek for reliable physical signs in order to provide against errors in diagnosis. In the experience of the author the difficulty in diagnosis depends upon the fact that ulcer of the duodenum presents neither a peculiar nor a constant disease picture; there is no definite symptom-complex. Many cases present no evidences; others only slight and temporary troubles the nature of which cannot be determined. The majority of the cases have a chronic course extending over many years with periodic attacks of severe pain. This periodicity, with pain lasting from three to six weeks with an intermission of several months, is quite characteristic. As this occurs only in chronic cases, it is of no aid in making an early diagnosis. Another feature agreed upon by various observers is the appearance of the pain three to four hours after meals, severe, cramp-like, lasting about an hour, and not always relieved by taking food. This pain is especially suspicious when

coming on suddenly during the night. Hyperchlorhydria in itself is not suggestive, as it occurs in so many conditions, but when associated with pain it becomes a very important diagnostic factor. Another symptom of very great importance is loss of weight in a very short time.

As compared with these three symptoms other evidences, such as the seat and radiation of the pain, feeling of pressure and fulness in the epigastrium, distention of the abdomen, general vasomotor disturbances, vomiting, hemorrhage, and the like, are not of much value. The same is true of such objective signs as ventral and dorsal tender points, disturbance of stomach secretion, and occult blood in the stools, all of which are quite inconstant and often occur in other diseases of the alimentary tract. There is one objective sign which, when present, is pathognomonic—that is, intermittent motor insufficiency of the stomach leading to stagnation of food, high-grade disturbance of amylolysis, and the presence These condiof yeast cells and sarcinæ. tions are found only during the painful attacks and are subject to daily change in intensity. This condition can be accounted for only on the ground of an intermittent pylorospasm, which is itself a characteristic accompaniment of duodenal ulcer.

The differential diagnosis concerns such affections as ulcer of the pylorus with or secondary stenosis: recurrent chronic cholecystitis; gastric crises of tabes, which are characterized by hyperacidity and motor disturbances; and gastric neurasthenia. Especially does neurasthenia often present the picture of organic lesion. many cases it is necessary to watch the patient over a long period of time in order to establish a diagnosis. When the diagnosis has been established several weeks of energetic treatment should be carried out, consisting of rest in bed with continual hot compresses over the epigastrium; diet of milk and cream, thick soups of flour and legumes, with butter and yolk of eggs, raw eggs, rice pudding, broths, porridge, etc.

Before a case can be pronounced cured there should be freedom from symptoms

for a year after treatment has stopped. If medical treatment is not successful operation should be resorted to. It appears that from the pathological point of view the most rational operation is resection of the ulcer when this is possible. Gastroenter-ostomy appears to be less desirable and effective in duodenal than in gastric ulcer, for it does not always circumvent recurrence of the painful attacks.

#### NERVE ANESTHESIA IN KIDNEY OP-ERATIONS AND THORACOPLASTY AND IN OPERATIONS ON THE TRUNK IN GENERAL.

KAPPIS (Centralbl. f. Chir., 1912, xxxix, 249) says novocaine-suprarenalin gives us a relatively safe and strong local anesthesia. It is an important advance, particularly when peripheral nerve trunks are injected. It has been employed in operations on the trigeminus region and the extremities. Nephrotomy, amputation of the breast, and thoracoplasty have been done with it. Kappis has used it for a pyelotomy, a nephrolithotomy, and a nephrectomy. The method is as follows:

In order to inject the intervertebral nerve, the needle is introduced about 31/2 centimeters from the midline on a level with the lower border of a rib. The rib in this position is not palpable, but its position can be determined in the following manner: Even in stout individuals somewhere in the back, one of the lower ribs will almost always be palpable. The lower edge projects toward the median line. The needle is to be introduced at a point where the lower edge of the rib is 31/2 centimeters from the median line. The rib is reached at a depth of about 4 or 5 centimeters. about in the angle between the transverse process and the rib, which can occasionally be distinctly felt. Keeping as much as possible in this angle at the lower border of the rib, the needle is pushed forward and somewhat medially, and the fluid divided between the level of the rib and 11/2 centimeters deeper. When the injection has been made under one rib, the other points of injection are selected, since one

simply keeps in the line 3½ centimeters from the median line and goes about 3 centimeters upward or downward, seeking in a similar manner the lower edge of the rib and making the injection. The transverse process of the lumbar vertebræ must always answer for the ribs, but they are further apart than the ribs. Ten cubic centimeters of a 1.5-per-cent novocaine-suprarenal solution is injected.

The operation should begin in about a quarter of an hour after the injection. In his first two kidney operations, Kappis injected from the ninth dorsal to the second lumbar vertebra on the affected side. Since the stripping off of the peritoneum was not completely painless, in the next operation he injected also the seventh and eighth dorsal, but without a better result. With a proper injection the skin, soft tissues, and kidneys, with a large portion of the ureter, will be completely anesthetic, but not so with the stripping of the peritoneum. For this reason on one occasion he gave 15 drops and on another 30 drops of ether. The method is an important advance in kidney operations, especially when the kidney not operated on is diseased. It permits the avoidance of a postoperative nephritis from the narcosis in the remaining kidney after a nephrectomy.—American Journal of the Medical Sciences, June, 1912.

#### THE RESPECT DUE TO SURGICAL AN-ESTHESIA AND ITS SIGNIFICANCE.

FERGUSON (Long Island Medical Journal, July, 1912) deals instructively with a topic of general interest. He holds that more importance should be ascribed to the position of anesthetist than is now attributed to it: that the interne should be allowed time for a study of anesthesia, and that the hospital should see that such time is used for the purpose intended; that provision for the necessary apparatus of the anesthetist should be made. Under this head are included masks adapted to the administration of any anesthetic, excepting nitrous oxide; ether, ethyl chloride, chloroform. pair of Stille's posterior nares cotton carriers, which are by far the best instruments to use for swabs or for whatever use a sponge carrier or a pair of throat forceps may be needed. Sponges of suitable size, made by cutting a piece of coarse gauze two inches square, folding it once in the middle, then again at right angles to the first fold, and finally rolling it up into a bacillus. A simple mouth-gag. An oral screw with cannula. Carmalt's tongue forceps, the only kind that should ever be used on the tongue; care should be taken to have at hand a pair with a small hole to receive the point. If the forceps have a fenestrum it is practically impossible to use them without buttonholing the tongue. Some dental props for use if the operation is about the mouth and nitrous oxide or ethyl chloride is to be administered; a spasm of the masseter muscles is so common during the administration of these anesthetics that unless the jaws be separated before the administration is begun, it may be impossible to expose the field of operation. A simple apparatus for supplying ether vapor from a distance; this is a necessity in operations about the face and within the buccal cavity. An armamentarium for hypodermic medication, which, however, is of little use. An apparatus for hypodermoclysis, sterile, and all ready for use. Simple salt solution. Gauze in various sized sheets. Towels. A pus basin. A six-ounce syringe; the MacElroy aseptic Triumph glass syringe with asbestos packing, having a catheter point, is the best. Two small rectal tubes or two large softrubber catheters. Two rubber tubes with a Y for Crile's method of anesthesia. Squibb's olive oil. Eight-ounce bottles. Moreover, the anesthetist should have a competent nurse as an assistant. The room should be warm and the environment should be undisturbed.

Finally, as the most important point Ferguson insists upon the major value of olive oil as a means of restoring phagocytosis. He states that every anesthesia by chloroform or ether reduces the opsonic power of the blood. Because of this impaired immunity an infection which would otherwise not become anything of im-

portance may develop into a serious septicemia. Under favorable circumstances this phagocytosis is not restored of itself except in from a day and a half to three or more days. If, however, for a patient who has been properly prepared, six ounces of pure olive oil at a temperature of about 104° F. be injected slowly into the sigmoid flexure or higher up in the large intestine, phagocytosis will be restored to its preanesthetic condition in from three to five hours. Care must be taken to know that the olive oil is pure, since mineral oils will not be absorbed at all. Animal oils are so slightly absorbed as not to be worth consideration. Cottonseed oil is absorbed slowly, but not nearly as rapidly as is olive oil.

# ABDUCTION OF THE SHOULDER: AN INTERESTING OBSERVATION IN CONNECTION WITH SUBACROMIAL BURSITIS AND RUPTURE OF THE TENDON OF THE SUPRASPINATUS.

Codman (Boston Medical and Surgical Journal, June 13, 1912) states that recently in demonstrating to some students a case of subacromial bursitis due to a partial rupture of the supraspinatus, the patient called attention to the fact that when he leaned over with his finger-tips near the floor he could move his shoulder much more easily.

The reason and importance of this fact is at once clear. When a person stands with the knees straight and the finger-tips close to the floor, the humerus is abducted on the scapula by gravity alone without much muscular effort.

From a clinical point of view this fact is of great value in both diagnosis and treatment. A striking clinical experiment can be made by utilizing this fact in the acute cases of subacromial bursitis. The patient usually presents himself a few days or a few weeks after the injury to the shoulder and alleges that he cannot raise his arm. In attempting to raise it for him, we find that we are prevented by the protective spasm of the muscles. We then ask the

patient to bend over and touch his fingertips to his toes. This he will readily do because the abduction is performed by gravity alone and he is not required to put his tender supraspinatus on the stretch. When he is down in this position it will be observed that his shoulder is completely abducted, as the axis of the spine of the scapula is parallel with the axis of the shaft of the humerus. If we then lift the patient's arm and at the same time ask him to stand up straight, he rises until the axis of the arm is vertical and pointing toward the ceiling. The act is accomplished without pain, and in surprise he holds the arm in this position himself. His pleased and foolish smile in finding the impossible accomplished is very amusing.

In the descent of the arm to the side, however, pain is again felt as the supraspinatus is compelled to work against gravity. The usual consequence is that protective spasm keeps the scapula and humerus in the fixed relation of abduction, while most of the descent is accomplished by the abduction of the scapula on the chest When this has reached its normal anatomical limit there is a sudden relaxation of a semivoluntary character, and the angle of the humerus with the scapula changes with a jerk, the patient allowing the arm to drop to complete adduction. This change causes some pain as the sensitive point on the base of the bursa passes out from under the acromion. If it is wished to spare the patient this unnecessary jog, we may tell him to lean forward again while we take the weight of his arm. When he has once more touched his finger to his toes, he can straighten up again and gravity will take charge of his adduction without pain.

In treatment, too, this observation can be utilized by beginning the mobilization of very acute cases and postoperative cases by simply having them lean the body forward with the arm hanging instead of making them attempt abduction against gravity in the usual way.

This test also may serve to differentiate cases in which there is a question of

whether the loss of abduction is due to spasm or actual limitation from adhesions. It may be of assistance, too, in determining the extent of the rupture of the supraspinatus.

Let the reader try for himself the effect of stooping forward, touching his toes, fixing his deltoids, straightening up again, and finishing the abduction by rotation of the scapula on the chest wall.

In this connection it is interesting to compare the enormous mechanical burden imposed on the supraspinatus in vertical man as compared to his quadruped prototype. In man, the supraspinatus applies its power to a very short arm of a very long lever to raise a relatively great weight to a relatively great height. In the quadruped it merely helps swing the pendulum-like fore extremity on a little wider excursion than gravity would naturally take it, as the animal walks, trots, or runs.

No wonder that partial rupture of the supraspinatus is the common accident when vertical man, suddenly losing his equilibrium, throws his arm up to recover his balance.

Finally, simple as this point is, its proper appreciation by the medical profession will materially help to relieve the suffering and hasten the recovery of all stiff and painful shoulders. Obvious and trivial as it may seem, it will prove of assistance in every shoulder case and should become of daily use in every large hospital clinic.

One needs to try it in but one acute case to realize its importance.

#### CANCER OF THE UTERUS.

COBB (Boston Medical and Surgical Journal, July 11, 1912) submits a paper based on 309 cases of cancer of the uterus. Two hundred of the 309 cases were pronounced as unfit for radical operation. From 14 vaginal hysterectomies there was no immediate mortality; two of eight cases of cancer of the cervix were cured. The largest number of reported cures is 10 per cent. There were 71 abdominal hysterectomies for cancer of the cervix. In 49 cases no attempt was made to widely

remove the parametrium. Seventeen died as a result of the operation. Of the 32 cases which survived the operation, 29 have been traced, and four are alive without recurrence for more than five years.

In the 22 more or less radical hysterectomies there were five immediate deaths, and all the remaining 17 were traced. Five are alive and well and free from recurrence from five to eleven years. One lived over eleven years and now has probable recurrence in the pelvic bones. The usual cause of death was septic peritonitis. Shock came next in order of importance.

The essential features of the operation are the careful preliminary preparation of the patient, prevention of septic infection from the growth itself, dissection of the ureters, removal of the glands, hemostasis, drainage, and after-treatment. Every effort should be made to shorten the period of anesthesia. The operation, with its preliminary stage of vaginal disinfection, in skilled hands will require from one and three-quarters to three hours. This implies a skilled anesthetist. Infection is avoided by a thorough destruction of the growth, disinfection by use of the curette and cautery, and strong antiseptic solution in the preliminary vaginal stage. This should be done immediately before the abdominal operation and at the same anesthetization. Saturated solution of permanganate of potassium and oxalic acid and corrosive sublimate are advised as antiseptics. Moreover, the right-angled clamps devised by Wertheim are of great service. clamps are applied across the vaginal tube well below the cervix, after which the vagina is amputated with the cautery. Free exposure of the ureters is of prime import. This should be done with the least possible mechanical insult to these channels since interference with the blood supply may readily result in fistula. Transverse incision is advised and glands should be removed only when palpably enlarged.

Clark's suggestion to make a preliminary survey of the glandular condition is regarded as most valuable, but to do this it is necessary to split the peritoneum and lay the great vessels free, for in no other way can one determine accurately by palpation whether the glands are enlarged or not. If numerous enlarged nodes are felt, especially in the sacral chain, a radical operation is inadvisable and the operator should content himself with a simple hysterectomy. The glands should be removed as the last stage of the operation. In the majority of cases it is necessary to drain only through the vagina with strips of iodoform gauze, peritoneal surfaces being sutured over so as to form a pelvic floor above the gauze. Gauze strips should be started on the fifth day, and all removed on the ninth and tenth.

In the after-treatment it is of the greatest importance to use a moderately elevated posture and continuous salt solution by rectum after the method of Murphy in the treatment of septic appendicitis and peritonitis. The extreme erect position, however, should be avoided; lifting the head of the bed about eighteen inches is sufficient. Use of an inlying catheter from the start with urotropin and irrigations are advisable as routine measures in each case to alleviate and cut short the usual cystitis.

# THE EVOLUTION OF NEW BONE AND ITS RELATION TO THE REPRODUCTION OF JOINTS AFTER ANKYLOSIS.

JOHN B. MURPHY (Annals of Surgery, August, 1912) notes that an accurate appreciation of the embryology of bone is essential to a fuller understanding of its pathological processes and its reproductive power. Ossification occurs in long bones through the division of the cartilage cell and the disturbance of the cartilage cell membrane from what is called the ossific The osteoblasts then spread center. through all of the cartilage of the shaft, or better, the cartilage cells become transformed or displaced by osteal cells from one epiphysis to the other. This is what is known as cartilage ossification.

The second type of ossification, which takes place in flat bones, and particularly the bones of the face, is an ossification in a white fibrous tissue. In the embryo we have the representation of the bones of the face first in a white fibrous connective tissue: ossification starts in the center or margin of this and spreads through all of the tissue. Ossification of white fibrous tissue takes place pathologically in the continuation of the periosteum as represented in the tissue of the capsule of joints, particularly of the hip-joint. Ossification in white fibrous tissues takes place in the strands of the muscle in myositis ossificans. Ossification can take place and does take place in blood-clots that occur near a lacerated periosteum or near a fracture. This ossification is believed to be due to osteoblasts that have been carried by the blood stream from the fracture or from the lacerated periosteum, as was advocated by Macewen.

The degree of ossification is limited by the periosteum or may be limited by the covering of the end of a bone by any of the mesoblastic type of tissues. In other words, when a fracture occurs, if the ends of the bone be covered with a fascia and muscle or a quantity of fat, no effort is made by the osteoblasts of the medulla, the compact bony tissue, or the subperiosteal layer to reproduce bone across the gap. If, on the other hand, the gap between the ends of two bones is filled by a blood-clot and not by an organized connective tissue in fractures of the long bones, a large area, an inch, an inch and a half, or two inches, may be spanned by the osteogenetic elements in their efforts to reunite the bone. In fractures of the flat bones there is no such prodigious effort made to produce a union; they rarely span one-quarter or onehalf inch in their effort at the reëstablishment of union after fracture. This is noticeable in the mandible and in the trephining operations and fractures of the skull.

We can to advantage divide the osteogenetic elements of bone, or liken the osteogenetic elements of bone to that of a tree, the medulla representing the trunk and always carrying the greatest osteogenetic potency; the Haversian canals, canaliculi, and lacunæ representing the branches of the

tree, always carrying osteoblasts on the walls of the Haversian vessels; and the leaves are represented by the subperiosteal osteogenetic layer, in which in youth there is an enormous osteogenetic potency, in middle age a mild degree, and in advanced age no osteogenetic power. The periosteum of the epiphysis has no subperiosteal potency or inductiveness. The fact that this has no bone-producing power accounts for the absence of callus and osteomata on the side of joints following fractures of the epiphysis. It will therefore be seen that in the regeneration of bone we must utilize the osteoblasts of the medulla, the Haversian canals of the lacunæ, or the osteogenetic inductiveness of the subperiosteal zone. We can set it down as a fairly wellestablished fact that in bone transplantation and bone grafting and bone reunions the following principles must be complied with:

The periosteum fully detached from bone and (1) transplanted into a fatty or muscletissue bed in the same individual, if he be young, may produce a lasting bone deposit; (2) transplanted into another individual or animal of the same species and under the same conditions, it rarely if ever produces a permanent bone deposit; (3) transplanted into another species it never produces a permanent bone deposit.

Periosteal strips elevated at one end from the bone and attached at the other, if turned out into muscle or fat, reproduce regularly bone on their under surface for a greater portion of their entire length.

Transplanted into other individuals or animals of the same species and connecting at one end with exposed or freshened bone, it rarely produces permanent bone, even for a small extent at its basal attachment, and never produces bone for its full length.

Bone with its periosteum transplanted into muscle, fat, etc., in the same individual, and free from bony contact, practically always dies and is absorbed, except in the case of very young children or infants. Transplanted into another species it is always absorbed.

Bone transplanted without the perios-

teum into the muscle or cellular tissue always dies and is ultimately absorbed.

Bone with or without periosteum transplanted in the same individual and connected with other living osteogenetic bone at one or both of the ends of the transplanted fragment always becomes united to the living fragments and acts as a scaffolding for the reproduction of new bone of the same size and shape as the transplanted fragment, if asepsis is attained. This new bone increases to such size as is necessary to give the support required by nature in the extremity in which it has been placed. It will scaffold the production of new bone even into the joint when it is surrounded by capsule, and tuberosities are produced in about the regular location, as in the normal anatomic conformation.

The transplanted fragment, no matter how large or how small, is always ultimately absorbed. The rôle it plays is to give mechanical support to the capillaries and blood-vessels with their living osteogenetic cells, as they advance from the living bone at both ends of the transplanted fragment into the Haversian canals, canaliculi, and lacunæ of the transplant. New lamellæ are deposited around the new capillaries, and these lamellæ fit into and adjust themselves in the graft, so that the bony union is actually formed and mechanical support given long before the transplant is entirely absorbed and replaced by new bone. Ultimately, all of the transplant disappears as new lamellæ are formed by the osteoblasts, and the graft lamellæ are removed by the osteoblasts.

The practical application of bone transplantation is to the following conditions:

To correct deformities resulting from defects of development, as aplasic extremital bones—radius, ulna, humerus, tibia, fibula, and femur, and congenital saddle-nose, aplasis mandible, etc.

To reproduce union in ununited fractures.

To replace bone removed by destructive infections, osteomyelitis, tuberculosis, lues, etc.

To restore or supplant fragments dis-

lodged by fractures, as the head of the humerus, head of the femur, shaft of tibia.

To replace bone removed for non-malignant neoplasms, cysts, myeloma, osteitis fibrosa, etc.

To replace bone removed for encapsulated malignant disease, as giant-cell and chondral sarcoma, etc.

#### THE TREATMENT OF SPIRILLUM AF-FECTIONS OF THE MOUTH WITH LOCAL APPLICATIONS OF SALVARSAN.

ZILZ (Münch. med. Woch., 1912, lix, 20) has had good results with the use of local applications of salvarsan to various nonspecific ulcerative conditions of the mouth and in various inflammatory conditions of the gums. He also mentions Vincent's angina as among the conditions that are most favorably influenced by this local treatment with salvarsan. The lesions are thoroughly cleansed with warm physiological salt solution, and salvarsan is applied directly in a 10-per-cent aqueous or glycerin solution, or in an oily suspension. The solutions should be made up fresh, but suspensions in paraffin keep for several days. Zilz says that sluggish ulcers clear up rapidly, and show a tendency to heal. Various forms of spirochætæ that occur in great numbers in many mouth inflammations disappear rapidly under the influence of this local treatment.—American Journal of the Medical Sciences. June. 1912.

#### THE MANAGEMENT OF OCCIPITO-POSTERIOR POSITIONS.

RICE (American Journal of Obstetrics, August, 1912) summarizes his analysis of 400 cases of occiput posterior positions in which there were one maternal and eighteen fetal deaths, as follows: Of the ten fetal deaths six were in forceps cases, three cases were complicated by flat pelves and one by a generally contracted pelvis. Of the four cases delivered spontaneously, three deaths were due to prolonged labor under charge of midwives before being turned over to the hospital. Delivery in

these cases occurred within a very few minutes after the head had been flexed and rotated manually. There was one death due to congenital syphilis.

The prolonged labor in occiput posterior positions is due to early rupture of membranes and maldirection of force.

Prolonged labor is more common in primiparæ.

In primiparæ with vertex presentation, early rupture of membranes is a very suggestive sign of occiput posterior positions.

In occiput posterior with poor flexion spontaneous delivery can only occur after a long labor with strong pains.

In multiparæ relaxed pelvic floor is often a frequent cause of delayed rotation.

In primiparæ early rupture of membranes is the principal cause of prolonged labor.

Double application of forceps offers the best method of delivery where the head is high in the pelvis.

With floating head, if not contraindicated, version offers the best solution in a flat pelvis.

With head low in pelvis, partial rotation by the blades is the best method.

# THE EFFECT OF URETERAL LIGATION EXPERIMENTAL AND CLINICAL.

BARNEY (Surgery, Gynecology and Obstetrics, September, 1912), writing on this subject, draws certain conclusions based on experimental effects and compared as closely as possible to clinical and experimental observations. These are as follows:

Sudden and complete occlusion of one ureter may produce no symptoms whatever, and uninterrupted recovery may ensue in 21 per cent of cases, but in the event of an injury to both ureters there is complete anuria in all, as is to be expected, whereas in the unilateral injuries suppression of urine occurred in only 1.6 per cent.

Ureteral fistulæ are developed in 24 per cent, their site depending upon the nature of the operation.

Where only one ureter is ligated, pain and tenderness in the kidney, usually subsiding spontaneously, are to be expected in 26 per cent. They have not been found in cases of bilateral injury.

Infection of the kidney produced by the injury to the ureter, or aggravated by it, and necessitating subsequent nephrectomy, occurred in 15 per cent.

Both ureters may be clamped for as long as seventy-two hours with complete recovery after removal of the obstruction, whereas one ureter may be completely blocked for ten days without destroying the integrity of the kidney.

Of 15 patients in whom the subsequent condition of the kidney was investigated, hydronephrosis was observed in eighty per cent, but in no case was this of more than moderate size. In the remainder there was said to be "no change" in the condition of the kidney.

Investigation of this series of cases shows (a) that there is strong probability that many a ureter is ligated without the fact being known, and (b) that in the presence of postoperative anuria, and in the absence of localizing symptoms, examination of each ureter by the cystoscope may be the only means of determining whether one or both ureters have been occluded.

# AN APPARATUS FOR INTRATRACHEAL INSUFFLATION.

JANEWAY (Annals of Surgery, August, 1912) pictures and describes an apparatus which will furnish a patient with a continuous current of warm moistened and filtered air mixed with any amount of ether vapor, and interrupted at regular intervals, in order to allow at such intervals of partial collapse of the lungs. At the present time the advantages of such a method of anesthetization by intratracheal insufflation are abundantly substantiated. The apparatus is easily portable and will run upon both the alternating and direct current, the current of air being supplied by a rotary blower, after which it is filtered and then passes through a valve over the surface of the ether, thence over the surface of heated water in a jar. The water in the jar is kept at a constant temperature by an electric

heater inside. By means of the valve any proportion of the air current may be shunted directly over the heated water in the jar, thus diminishing reciprocally the amount which passes over the surface of the ether. There is a blow-off valve attached to relieve pressure at 20 or 25 mm. of mercury. A bulb removes the water of condensation from the efferent current of air while the afferent tubes are becoming warmed. Janeway accentuates the need of having a bellows on hand in case the electrically driven air-pump should fail.

#### THE ROENTGEN RAYS IN GYNE-COLOGY.

WEBER (Münchener medicinische Wochenschrift, Jahrg. 59, Nr. 14) of Döderlein's clinic reports upon the use of the x-rays in the treatment of various gynecological conditions. Forty-nine cases of excessive climacteric hemorrhage were treated; seven of these did not follow the treatment to a conclusion; two cases of severe hemorrhage appeared not to be benefited; eight are still under treatment with marked benefit; 31 have been cured. In the last class some have passed the menopause, while others have been restored to a condition of normal menstruation. In four out of nine cases of menorrhagia or metrorrhagia in young women cure was effected, while in the remaining five no result was obtained. In three cases of dysmenorrhea marked benefit was obtained. In myoma of the uterus no good results were noted. In one case in which the bleeding increased under treatment operation had to be resorted to. In three cases in which the x-rays have been used for the past six months in an attempt to bring about sterilization, conception has not occurred, although sexual intercourse has been kept up. The danger in this procedure would be that conception might occur with an ovum which had been injured by the rays, with the result that a malformed child might be born. In three mild cases of pruritus vulvæ good effects were obtained, but in three severe cases there was no benefit.

# A METHOD OF SECURING CATGUT ON THE NEEDLE.

JETT (Surgery, Gynecology and Obstetrics. August, 1912) calls attention to the annovance and loss of time incident to needles becoming unthreaded, and suggests a method of avoiding this difficulty that has been useful. A number of good surgeons have given up the problem and sew with fine catgut double. Jett's first method is to thread the needle down the catgut for about four inches. The gut is then untwisted, about one inch from the end which is through the needle, and kept untwisted by giving it a sharp bend at the untwisted point. (In case the catgut is small, or cannot be untwisted, it is well to flatten it with a smooth-jawed forceps.) The point of the needle is then passed through the gut at the untwisted point, dividing it in two equal parts. The long end of the gut is then pulled, bringing down the catgut where divided over the needle to the eye of the same. Then a jerk on the short end of the gut brings it over the end of the needle. and the tie is complete.

In case a large, sharp-cutting needle is used, it may be necessary to modify this by making a hole in the catgut with a round needle, and then push the eye of the needle to be used through this hole in the catgut. Thread the needle with the long end of the catgut and complete as before.

#### MAJOR OPERATIONS ON THE TEM-PORAL BONE AND THEIR PATH-OLOGICAL INTERPRETATION.

Senseney and Guggenheim (Interstate Medical Journal, May, 1912) have made a general study of this subject, in view of the recent remarkable advances in the diagnosis and treatment of intracranial complications and labyrinthitis, holding as they do that recognition of this latter condition is of major importance to the family physician.

The operations they consider are the simple mastoid operation, the radical mastoid operation, operation for thrombosis of the lateral sinus, operations for brain abscess and meningitis, the labyrinth operation.

The simple mastoid operation consists in the opening of the antrum and its accessory cells, and the removal of all necrotic material. As these air-cells are not always confined to the mastoid but may extend into the zygomatic, squamous, and petrous portions of the temporal bone, and as acute inflammation of the mastoid is often complicated by periostitis of the inner cranial table, the simple mastoid may at times be a very extensive operation. The simple mastoid is also used as the preliminary procedure in operations for cerebellar abscess, thrombosis of the lateral sinus, and extradural abscess.

Though the mastoid process is always involved in acute suppurative otitis media, surgical intervention is only called for when there is lack of proper drainage. longed retention causes pain, redness, swelling, edema, tenderness on pressure over the mastoid, and in some cases sagging of the posterior superior wall of the external canal. It may result in a postauricular abscess, fistulæ opening into the external canal, and abscess in the side of the neck. The necrosis may extend inward and lead to extradural abscess, perisinus abscess, sinus thrombosis, labyrinthitis, meningitis, and more rarely to brain abscess. Where there is good drainage, the mastoid involvement may only be shown by the tendency of the acute suppuration to become chronic. The indications for simple mastoid operation are: Caries of the bone, as shown by fistulæ or depression of the roof and posterior bony wall of the external canal. Persistence of pain and swelling over the mastoid process, symptoms of intracranial complication, and persistence of a foul, thick purulent discharge.

In the radical mastoid operation the posterior bony wall of the external canal and the major ossicles are removed, thus throwing the tympanum, external canal, mastoid antrum, and remainder of mastoid process into one common cavity. The cellular structure around the mouth of the Eustachian tube is destroyed and the tympanic end of the tube curetted in order to produce permanent closure. This is followed by a plastic on the membranous external canal, whereby the common cavity is later epidermitized.

The term "radical" does not refer to the amount but to the location of the material removed. Radical implies removal of the two major ossicles and the drum membrane. The indications for the radical operation arise chiefly in the course of chronic suppurative otitis media; although under certain conditions this procedure is indicated in acute suppuration. The immediate indications are presence of caries of the temporal bone; extensive degeneration of the tympanic mucosa; cases in which the discharge contains flakes or masses of cast-off epithelium; cases with polypi and polypoid granulations, which occur after removal: cholesteatoma; pus retention; stenosis or atresia of the external canal; facial paralysis; intracranial complications and labyrinthitis. When any of these conditions complicate chronic suppuration there is always danger of intracranial complication. The gravity of cholesteatoma cannot be exaggerated. This epithelial mass constantly increases, and by destroying the bone in its contiguity leads slowly but surely to fatal complications. Facial paralysis occurring during the course of a chronic suppuration is often due to an erosion of the facial canal. This opens an easy path to the meninges. When there exists thrombosis of the lateral sinus, the sinus is exposed, the internal jugular veins ligated, and the sinus opened with or without removal of the thrombus. This procedure is termed the lateral sinus operation.

Sinus thrombosis is recognized clinically by the septic temperature, chills, pain on pressure, and at times edema at the posterior edge of the mastoid, tenderness in the region of the internal jugular vein, and the signs of metastases. Thrombosis of the cavernous sinus is fortunately very rare.

Brain abscess of otitic origin occurs during the course of or following acute and chronic purulent otitis media. It results from the acute much more rarely than from the chronic suppuration. The abscess is usually found either in the temporal lobe of the cerebrum or in the cerebellum. Brain abscess of otitic origin should always be evacuated, by way of the mastoid process; temporal lobe abscess through the tegmen antri and tympani; cerebellar abscess by removing the bone between the lateral sinus and the posterior semicircular canal. Where a thrombosis of the sinus coexists, the abscess of the cerebellum may be opened through the wall of the sinus. Operation by way of the mastoid is greatly to be preferred over all other methods.

In brain abscess there is a latent stage in which diagnosis is extremely difficult. Choked disks are rare, thus contrasting with tumor. The character of the fever and the results of lumbar puncture are our most reliable aids. In brain abscess during the latent stage there is no fever. With the onset of the manifest stage the temperature rises rapidly without a break, and remains elevated with definite remissions until death or the resumption of the latent stage, when it falls rapidly to normal. With meningitis the onset is less rapid. The patient is usually torpid. The fluid obtained by lumbar puncture is usually cloudy, contains leucocytes, but no bacteria, while the fluid in meningitis contains bacteria. The stiff neck of cerebellar abscess differs from the retraction of meningitis in that the patient merely tries to protect his neck from movement. In cerebellar abscess we may have all the symptoms of labyrinthitisnausea, vomiting, disturbance of equilibrium, nystagmus, and no cochlear or vestibular function demonstrable. Here the labyrinth operation should be performed, exposing the posterior fossa. If following the labyrinth operation the nystagmus remains on the diseased side, it surely indicates an intracranial condition, probably cerebellar abscess. The labyrinth operation consists in the opening and drainage of the labyrinth; opening the cochlea, semicircular canals, and vestibule, and at times chiseling as far as the internal auditory meatus. This is accomplished by the radical mastoid operation in order to gain access to the osseous capsule of the labyrinth. The labyrinth operation is indicated in diffuse suppuration

of the labyrinth. There are certain definite symptoms referable to the labyrinth. The cochlear symptoms are partial or total deafness, and pronounced tinnitus. The vestibular symptoms are spontaneous nystagmus, vertigo, and disturbance of equilibrium. Labyrinthine nystagmus is of sudden onset and rapid decline. In aural vertigo the patient describes his environment as moving rapidly around in one or the other direction.

The chief tests of the vestibular function necessary for differential diagnosis are the caloric and fistula tests. The caloric reaction consists in the production of movements of the eyes, nystagmus, by the irrigation of the ear with water above or below body temperature. These occur when the vestibular apparatus still functionates. positive caloric reaction then means that irrigation with hot or cold water produces nystagmus, or in case spontaneous nystagmus is present, influences the same one way or another, and that the vestibular apparatus still functionates. The fistula test is applied by either compressing air in the external canal or sucking it out. If the fistula exists movements of the eyes are produced in case the labyrinth still function-It is of course obvious that if the vestibular apparatus is destroyed the fistula symptom cannot be demonstrated even though a fistula exist. It is also evident that in a given case of labyrinthitis in which a fistula has been previously diagnosed, if the fistulous symptom ceases it is quite certain the vestibular function is lost.

The object of the labyrinth operation has been to prevent meningitis; therefore the operation must be timely. Whenever in the course of suppurative otitis media there arise symptoms of labyrinthitis—marked deafness, tinnitus, spontaneous nystagmus, vertigo, nausea, and disturbances of equilibrium—and we find by an examination that a patient is absolutely deaf (on the diseased side), and that neither the caloric reaction nor the fistula symptom can be elicited, the labyrinth operation is immediately indicated. The one exception to this rule is tubercular labyrinthitis and advanced tuber-

culosis of the lungs, where both the radical mastoid and the labyrinth operations are contraindicated; for tubercular labyrinthitis rarely leads to meningitis if left alone, while following the radical mastoid and labyrinth operations tubercular meningitis very frequently develops.

Where the above indications have been followed exactly, the results of the labyrinth operation are very gratifying. Ruttin, of Vienna, reports 100 cases of labyrinthitis in which the above rule was followed with an operative mortality of only 1 per cent.

Before leaving this subject it may be well to speak of a tumor of the acoustic nerve. which gives rise to labyrinthine symptoms -e.g., the neurofibroma. This growth arises chiefly from the neurilemma of the cochlear division of the eighth nerve, in the internal auditory meatus, and grows very slowly. Finally, it involves the Gasserian ganglion of the fifth nerve at the tip of the pyramid. It affects in sequence the cochlear and vestibular divisions of the eighth nerve, the facial nerve, and the ganglion of the fifth nerve. Hence, symptoms appear in the following order: Impaired hearing and tinnitus and later total deafness; next nystagmus of great degree, and later negative caloric reaction; next facial paralysis; and last anesthesia of the cornea, etc. Operations for the removal of this tumor have never been particularly satisfactory.

#### TREATMENT OF INFECTED ABORTION.

HABERLE (Münchener medicinische Wochenschrift, Jahrg. 59, Nr. 14) reports upon the cases of infected abortion occurring in Hofmeier's clinic during the last twenty years, there being 98 in all. These are divided into two clinical groups. To the first group belong those which had a temperature of 101.5° or upward before operation, and to the second group those having a lower temperature. In the first group there were 30 cases, among them being some with severe clinical symptoms. In 16 cases there were one or more chills with high fever. In four cases there had been attempts at curettement prior to admission to

the hospital. Of these 30 cases two died, one of sepsis and the other of peritonitis. The remainder recovered and were in the hospital on an average of ten days after curettement. No patient had a prolonged convalescence.

In the second group were 68 cases, of which three proved fatal, one from peritonitis and two from pyemia. The average stay in the hospital was 9.6 days. In one patient pyosalpinx developed after curettement and fever remained high for a week. The patient was discharged cured in nine weeks. In another patient a mild peritonitis with moderate fever developed. In all the other patients the process was purely local.

The results in this series in which the treatment was active were much better than in other series from other clinics treated in an expectant manner. The technique consisted in cleaning out the uterus with placenta forceps, the sharp or dull curette, or with the fingers. Perforation of the uterus did not occur in any case. Following the cleaning out of the womb irrigation was done with ½-per-cent lysol solution and 10 to 20 Cc. of 20-per-cent solution of carbolic acid in alcohol

#### FRACTURE OF THE GREATER TUBER-OSITY OF THE HUMERUS.

PHEMISTER (Annals of Surgery, September, 1912) states that if the break involve the greater portion or the whole of the tuberosity it is attended by displacement, by pronounced pain and loss of function in the shoulder later, and limitation of motion, marked atrophy of the supraspinatus, infraspinatus, and teres minor muscles, and moderate atrophy of the deltoid. The head of the humerus appears abnormally broad anteroposteriorly, which results from the backward displacement of the fragment. External rotation is lost, but internal rotation is possible to an abnormal degree, due to the action of the unopposed subscapularis muscle. Palpation shows the prominence posterior to the head and just below the acromion to be slightly movable in the earlier cases, and usually

tender upon manipulation. Crepitus is usually absent. Abduction is very much restricted by the wedge-like action of the fragment between the head and acromion. There is more or less permanent disability.

In the cases of partial fracture and particularly the isolated ones the picture is a different one. Following the injury there is severe pain and loss of function out of all proportion to the apparent extent of the Ecchymosis very rarely occurs. Palpation shows tenderness in the region of the tuberosity. Usually neither abnormal bony prominence nor crepitation can be detected. Motion is limited in all directions. and external rotation is either diminished or absent. Perthes claims that most cases of habitual dislocation of the shoulder are the result of either a rupture of the insertion of the supraspinatus and infraspinatus muscles or less rarely of old fracture of the tuberculum majus.

When there is little displacement immobilization for from one to three weeks is indicated, followed by massage and exercise. Complete fractures with displacement of the tuberosity should be treated by operation.

Bardenheuer and Graessner recommend upward and backward extension with the limb in external rotation, but the position is an uncomfortable one and difficult to maintain.

Phemister commends the posterior incision. An angular cut is made over the tip of the acromion and backward over the entire length of the spine of the scapula, and then downward along the posterior border of the deltoid, after which an osteoplastic resection of the origin of the deltoid is made and the musculocutaneous flap turned forward. This route was first used by Kocher for resection of the shoulder-Perthes employed it for habitual dislocation of the shoulder, and Drüner for removal of a sarcoma of the posterior superior humeral region. The following is a detailed description of the first operation for making an incision backward along the entire length of the spine of the scapula and then downward and forward along the posterior border of the deltoid to within REVIEWS. 829

1½ inches of its insertion: The spine of the scapula was freed above, and the few fibers of the trapezius inserted to its inner extremity and overlapping the deltoid were sectioned. The deltoid muscle was then lifted up and undermined and the infraspinatus pushed away from the inferior surface of the spine. Beginning posteriorly a strip of bone about 2/3 centimeter thick and containing the attachment of the deltoid was chiseled off the entire length of the spine and acromion. This permitted the musculocutaneous flap to be thrown forward and outward, giving a full exposure of the head of the humerus, the broken-off tuberculum majus, and the supraspinatus, infraspinatus, and teres minor muscles inserted in it. There was a moderate amount of fibrous and little bony callus about the fragments and covering over the raw surface of the humerus. The bone was wired into position as it was too soft to be held The musculocutaneous flap was then reflected back and a strip of resected spine containing the deltoid attachment was tied into place by three kangaroo tendon sutures encircling it, and traversing holes

bored through the remaining portion of spine. The skin incision was closed without drainage. The arm was bandaged to the chest for two weeks, after which it was left free, and after three weeks active and passive motion was begun.

Six months after operation almost complete function of the shoulder-joint has returned, and the patient has been working as a laborer. There is still slight limitation of abduction.

#### SALVARSAN IN SYPHILITIC AND METASYPHILITIC DISEASES OF THE NERVOUS SYSTEM.

KLEINEBERGER (Berliner klinische Wochenschrift, Jahrg. 49, Nr. 10) concluded that paresis is not influenced at all by salvarsan, and tabes but very slightly. The results in syphilis of the central nervous system are quite favorable, and salvarsan offers many advantages over the old form of treatment. Experience with several cases shows that better results can be obtained with salvarsan combined with mercury than by either method alone.

#### REVIEWS.

INTERNAL MEDICINE. By David Bovaird, Jr., A.B., M.D. Copiously Illustrated. The J. B. Lippincott Company, Philadelphia, 1912. Price \$5.00.

By "Internal Medicine" Dr. Bovaird gives a title to a book which heretofore would have been called "A Practice of Medicine" in a somewhat condensed form, since the text covers about 600 pages; whereas most of the modern and complete books upon the Practice of Medicine contain almost double this amount. The book is arranged in chapters which closely follow the lines laid down in older volumes. Instead of opening with a discussion of the infectious diseases, it takes up first diseases of the respiratory and digestive tract, then of the kidneys and circulatory system, then diseases of the blood and constitutional diseases, intoxications and miscellaneous diseases, the infectious diseases not being con-

sidered until chapter eight is reached. We notice that lobar pneumonia is still classed by Dr. Bovaird among diseases of the respiratory tract, although as a general infection with localized lesions we think it should belong to the infectious diseases quite as much as typhoid fever. The utter hopelessness of attempting to show the rash of typhoid fever by a black and white illustration is shown by Fig. 63. Even a colored plate can scarcely represent the rose spots, and a black and white woodcut certainly cannot do so. We doubt very much whether in the feeding of typhoid patients calf's-foot jelly has any practical value, and we regret that the author does not emphasize the advantage of free feeding of typhoid-fever patients instead of apparently depending chiefly upon milk, although he does state that other articles of diet are often useful.

We distinctly differ from him in his statement that the cold bath in typhoid fever should begin at 90° and be gradually cooled by adding ice. This does not produce the "reaction" which is so essential, and he fails to recognize the fact that the object of the cold bath is not so much to reduce temperature as to produce those changes in circulation and nutrition which are essential. We cordially indorse his view that the coal-tar antipyretics ought not to be given in this disease, but we doubt whether opium is effective as a means to control diarrhea. Pulmonary edema as a complication of croupous pneumonia is in our experience very rare, although it undoubtedly does demand active medication as the author indicates. His view that digitalis is of great value in critical cases of pneumonia when given in full doses receives our hearty indorsement, for the common method of administering digitalis throughout the disease is not only useless but harmful in many instances.

It must not be thought from our criticisms of the illustration of rose spots in typhoid fever that the illustrations as a rule are not of value; on the contrary, the majority of them are excellent, but we do not think that any one who was not very familiar with cardiac pathology would be apt to find the ulcer in the neighborhood of the bundle of His, which is depicted in Fig. 38.

Taking it all in all, the book may be said to be an excellent one without being exhaustive, and to possess a large number of the good qualities of its predecessors without presenting any innovations in the method of teaching or of description which justifies its being considered as filling a niche peculiarly its own.

Brain and Spinal Cord. A Manual for the Study of the Morphology and Fibre Tracts of the Central Nervous System. By Emil Villiger. Translated by George A. Piersol, M.D., Sc.D., from the Third German Edition. With Two Hundred and Thirty-two Illustrations. The J. B. Lippincott Company, Philadelphia, 1912. Price \$4.00.

The translator points out that the increasing attention which is being given to the central nervous system has emphasized the

needs of a suitable guide for laboratory exercises, which Dr. Villiger's excellent manual fulfils. Its usefulness is also increased by the addition of Part III, wherein the architecture of the brain-stem by a series of consecutive sections is described. This part, which first appeared in the second edition of Villiger's original volume, has been still further extended in the third edition, which is now translated for the use of American students. Physicians interested in the anatomy of the nervous system will find this compilation of great value, as it will bring before them the latest views, and students who are struggling with the complex tissues of this part of the human anatomy in the ordinary text-book will get much aid from the numerous illustrations and clear text which the American translation presents. Long experience as a teacher of anatomy has qualified Dr. Piersol, the translator, in such a way that he is able to decide upon the value of a given volume, and then, in translating it, to present the facts in the most useful way to medical men.

AN INTRODUCTION TO THE STUDY OF INFECTION AND IMMUNITY. Including Chapters on Serum Therapy, Vaccine Therapy, Chemotherapy, and Serum Diagnosis for Students and Practitioners. By Charles E. Simon, B.A., M.D. Illustrated. Lea & Febiger, 1912.

The literature of this subject, which is exceedingly large and constantly growing, has been dealt with in monograph form on at least three occasions which were noteworthy. One of these was a book published many years ago by Dr. Sternberg on Infection and Immunity, later Bosanquet published a more modern volume, and now Dr. Simon presents us with a third summarization which brings the subject up to date.

The volume adequately covers the matter in hand, but as it contains less than three hundred pages and as the type is heavily leaded, it probably can be read in two or three evenings.

Starting out with the general subject of Immunology and Infection, it deals with the nature of infection, the REVIEWS. 831

offensive forces of the invading microörganisms and bacterial poisons, and the defensive forces of the individual attacked. It then considers the bacterial substances of the blood and antibodies, the side-chain theory, the different types of immunity and anaphylaxis, both as the result of injecting animal serum and in its relation to disease. Careful description is then given of active immunization against various infectious This subject is followed by andiseases. other chapter upon passive immunization, and then chemotherapy, which, at the present time, consists practically in the use of salvarsan and neosalvarsan, is discussed. The fifteenth and last chapter in the book deals with the application of immunological principles to diagnosis. Agglutination reactions, the Wassermann reaction, the tuberculin and luctin reactions are both consid-The book is to be cordially commended: first because of the excellence of its text, and secondly because without doubt it meets a very real need.

DISEASES OF THE STOMACH, INTESTINES AND PANCREAS. By Robert Coleman Kemp, M.D. Copiously Illustrated. Second Edition, Revised and Enlarged. The W. B. Saunders Company, Philadelphia, 1912. Price \$6.50.

When the first edition of Dr. Kemp's book appeared two years ago we were able to give it high commendation. The appearance of a second edition in so short a time. with several reprintings in the book in the meanwhile, is an evidence that our appreciation of its value is supported by members of the profession in general. The present volume is a large one of more than one thousand pages, with an illustration on every second or third page. These illustrations are, most of them, very useful. The text is emphatically text for the practitioner and student. The opening chapters deal with the anatomy of the stomach and intestines and the physiology of digestion, with the interrogation of the patient, or the history of the case, and with the general description of the methods employed in physical examination of the abdominal contents. The second part of the book, containing no less than nineteen chapters, deals

with the various disorders and diseases of the stomach and the methods of studying them. The third part contains fourteen chapters on diseases of the intestines, and the fourth part thirteen chapters upon diseases of the pancreas, all of which facts go to show the thoroughness with which the author has covered his field.

The increased knowledge which we have obtained through the advances of abdominal surgery concerning both operative and non-operative cases are given adequate consideration, and the reader of medical topics who has not brought himself up to date by the perusal of a volume such as this has no right to consider that he is abreast of many of his colleagues who have recognized the need of constant study in this field.

An attractive quality in the volume is the recognition on the part of the author that a large proportion of his readers are not specialists in diseases of the abdominal contents, and his descriptions of the methods employed in diagnosis, whether they be physical examination or chemical technique, are minute and practical. So, too, the directions which are given as to the methods of treatment which are to be employed are ample, and sufficiently definite to give the reader information which he can immediately put into use.

PATHOLOGY OF THE EYE. By P. H. Adams, M.A., M.B., D.O. Oxon., F.R.C.S. London: Henry Frowde, Oxford University Press, Hodder and Stoughton, Warwick Square, E. C. Oxford Publications, 1912.

This small volume is based on demonstrations given to students in the Oxford University. A considerable part of the text is devoted to special technique, including fixation, sectioning, staining, and mounting. Concerning much of the special pathology of the eye the reviewer does not presume to give an opinion; it is presented in an epitome only, but usually is stated quite clearly. A more extended knowledge of the general pathology of edema would, no doubt, have somewhat modified the author's statement with regard to papilloedema. The pathology of the various structures of the eye is taken up in order and illustrated by photomicrographs or gross photographs, many of which are exceptionally good. A photomicrograph of an epithelioma (Fig. 3) is very unsatisfactory and shows nothing of value; most of the illustrations are of more than average merit. The typography, paper, and manufacture leave little to be desired. On the whole the book can be commended.

W. M. L. C.

A TEXT-BOOK OF OBSTETRICS. Including Related Gynecological Operations. By Barton Cooke Hirst, M.D. Seventh Revised Edition. Illustrated. The W. B. Saunders Company, Philadelphia, 1912. Price \$5.00.

The first edition of Dr. Hirst's Obstetrics appeared in 1898, and it at once became popular with both students and practitioners. In each revision the author has taken pains to bring the text up to date, has taken out old illustrations and replaced them by new ones, and has given his readers the benefit of his constantly increasing large practical experience. A book so universally used as that of Dr. Hirst which has reached its seventh edition may well be said to be almost beyond the reach of the critic. There is little left to do therefore but to inform our readers that its popularity is deservedly maintained and that the present edition is, if possible, even better than its predecessor. Without being diffuse it adequately describes normal and abnormal labor, the associated diseases of pregnancy and the puerperal state, and their diagnosis and treatment.

A MANUAL OF AUSCULTATION AND PERCUSSION. By Austin Flint, M.D., LL.D. Sixth Edition, Revised and Enlarged. By Haven Emerson, A.M., M.D. Lea & Febiger, Philadelphia, 1912.

When we remember that it is almost thirty years since the death of Austin Flint, Senior, the publication of a revised edition of his classical manual is an extraordinary tribute to the character of the original text as he prepared it. His book appeared at a time when physicians had none of the laboratory aids in diagnosis of diseases of the lungs which now exist. In other words, it was written at a time when we had to rely practically entirely upon auscultation and

percussion. For these reasons the physician of thirty years ago was often far more skilful in practicing these aids to diagnosis than is the physician of to-day, who has come to depend too much upon what the laboratory tells him and to rely too little upon his own efforts. This sixth edition, revised by Dr. Emerson by permission of Dr. Austin Flint, Jr., known to so many thousands of students as an eminent physiologist, should be placed in the list of books for collateral reading in every medical school, and can be read with much profit by practitioners as well, whether they be old or new graduates.

THE BLOOD. A Guide to its Examination, and to the Diagnosis and Treatment of its Diseases. By G. Lovell Gulland, M.D., F.R.C.P.E., and Alexander Goodall, M.D., F.R.C.P.E. Illustrated in Black and White and by Colored Plates. E. B. Treat & Company, New York. 1912. Price \$5.00.

The scope of this book is wider than its title implies, for it deals not only with a description of diseases of the blood, but contains chapters on the Symptomatic Changes in the Blood in General and Local Diseases, and also gives an account of the various tropical diseases due to blood parasites. All the principal methods of examining the blood are given in sufficient detail to make it a working manual, and, unlike many books dealing with the blood alone, there is a great deal of text devoted to the treatment of the various diseases or disorders of the blood-making apparatus which are discussed in its earlier pages. The colored plates are unusually good and can be well used by the side of the microscope in guiding the tyro in hematology.

Consumption in General Practice. By H. Hyslop Thomson, M.D., D.P.H. The Oxford University Press, London. Second Edition. New York, 1912.

The present edition of this book has been entirely rewritten. It deals in twenty-one chapters with the diagnosis of pulmonary tuberculosis and with the influence of heredity and extraneous causes upon the development of the disease, passing on to treatment, and closing with an appendix dealing with sanatorium construction and the economy

of different types of sanatoria. The book is one which should be read by all those who are engaged in making the treatment of tuberculosis a specialty, but it does not seem to us that it has any particular claim upon the general practitioner, who can find almost all the information which he needs in any complete and well-written book devoted to the practice of medicine.

# THE PRACTITIONER'S VISITING LIST FOR 1913. Lea & Febiger, Philadelphia and New York, 1912.

For more than twenty years we have called our readers' attention to this excellent visiting list, which, besides containing thirty-two pages of data needed by practitioners, also contains a space for the record of all details of practice, both clinical and financial. It appears in four styles: Weekly for thirty patients; monthly, undated, for one hundred and twenty patients; perpetual, dated, for thirty patients weekly and sixty patients weekly. In its smaller sizes it can be readily carried in the inside pocket. The price is \$1.25, and with the thumb-letter index \$1.50.

STATE BOARD EXAMINATION QUESTIONS AND ANSWERS OF THE UNITED STATES AND CANADA. Fourth Edition, Thoroughly Revised. William Wood & Co., New York, 1912. Price \$3.00.

This book contains questions and answers from State Boards of Medical Examiners arranged according to States in alphabetical order, and giving the questions and answers in each State over a considerable number of years. It is hardly necessary to state that he who can answer the questions in this book can certainly pass any State Board. It is well prepared, and those who have to present themselves to State Boards can get much aid from its perusal, even if they have only a few weeks in which to "cram" for the examination.

#### A Doctor's Table Talk. By James Gregory Mumford, M.D. The Houghton, Mifflin Co., Boston and New York, 1912.

The persons described in this excursion into fiction on the part of a well-known surgeon are, we are told, all of them absolutely fictitious except one, the late Dr.

Cushing, of Cleveland, Ohio. The volume is dedicated to S. Weir Mitchell, "Great Physician and Beloved Man of Letters." It contains eleven chapters. The first deals with the Doctor's Habitat; the second and third with Doctor and Patient; the fourth, "Some Doctors and Their Troubles." The tenth chapter is entitled "Reminiscences," and the eleventh is a letter from "Scriba to his son Thomas."

MAKING GOOD ON PRIVATE DUTY. Practical Hints to Graduate Nurses. By Harriet Camp Lounsberry, R.N. The J. B. Lippincott Co., Philadelphia, 1912.

The text in this little volume is prepared by an experienced nurse to aid her inexperienced fellow nurses in mastering the difficulties of private nursing, which is just as different from hospital nursing as hospital practice differs from practice in the private household on the part of the physician. In other words, it is a little book rich in advice and experience, telling the nurse not only how to bear herself and handle her patient, but also how to prepare foods for the sick and fulfil her function in such a way that the physician, the patient, and the patient's family will all be pleased.

Practical Physiological Chemistry. By Philip B. Hawk, M.S., Ph.D. Fourth Edition, Revised and Enlarged. Freely Illustrated. P. Blakiston's Son & Co., 1913. Price \$2.50.

This book is designed for use in courses in practical physiological chemistry in schools of medicine and science. Appearing so short a time ago as 1907, it has in five years reached its fourth edition, proving that it has been found valuable by teachers and students in the various institutions where these courses are given.

MATERIA MEDICA AND PHARMACY. For Medical Students, with an Appendix on Incompatibility. By Reginald R. Bennett, B.Sc., F.I.C. Second Edition. H. K. Lewis, London, 1912. Price 4s. 6d.

This little book, which is made up of about 250 pages of very thin paper, is well printed, clear, and adequate. It can be well placed in the hands of the medical student, but cannot be widely used by Amer-

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ican students of medicine or pharmacy because the preparations named therein are those of the British Pharmacopæia.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by Henry M. Cattell, A.M., M.D. J. B. Lippincott Company, Philadelphia, 1912. Price \$2.00.

The present issue is Volume III of the Twenty-second Series. The first 80 pages are taken up with eight articles on Diagnosis and Treatment, then follow five articles upon internal medicine, eight articles upon surgery, one article upon ophthalmology, two on obstetrics and gynecology, and two upon occupational diseases, one of which deals with occupational hygiene in the navy by Surgeon-General Charles F. Stokes. In the surgical section an article of considerable interest is one upon the value of exercises in treating certain cases of acquired inguinal hernia.

THE PRACTICAL MEDICINE SERIES. Edited by Gustavus P. Head, M.D., and Charles L. Mix, A.M., M.D. Volume VI, General Medicine. Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, A.M., M.D. Series of 1912. The Year-Book Publishers, Chicago, 1912. Price \$1.50.

In previous years we have referred in terms of praise to this summarization of medical literature for the past twelve months. It deals with the infectious diseases of the mouth and the rest of the digestive tract, diseases of the liver and pancreas, and with a number of other miscellaneous conditions, so-called, such as paroxysmal hemoglobinuria, diseases of the peritoneum, and diseases of the abdomen.

A MANUAL OF PERSONAL HYGIENE. Prepared by Eminent Specialists. Edited by Walter L. Pyle, M.D. Fifth Edition, Revised and Enlarged. The W. B. Saunders Co., Philadelphia, 1912. Price \$1.50.

The only distinctly new addition which is made to the fifth edition of Pyle's Hygiene is a chapter upon the subject of adulteration and deterioration of food. The book is designed to provide the medical man and the general reader with facts by which his life may be regulated along healthy lines. Technical phrases are avoided and the advice given is wise. A very brief glossary of scientific terms is found at the close of the volume.

SURGICAL CLINICS OF JOHN B. MURPHY, M.D. Volume I, No. III. Illustrated. W. B. Saunders Co., Philadelphia and London, 1912.

This contribution, admirably illustrated, deals with Fracture, including impacted Colles's, Pott's, and that of the Olecranon; The Division of the Brachial Plexus; Tuberculosis of the Intestines; Cystic Goitre, Double Cervical Rib, Hypernephroma, Cholelithiasis, Typhoid Spine and Extradural Hemorrhage from Trauma.

In regard to impacted Colles's fracture Murphy holds that the only way to reduce properly is to increase the deformity, unlock the fragments, push the lower fragment down, and then flex forward. If the fracture is properly reduced the fragment remains in place without any splint at all. The reduction should always be done under an anesthetic. The plaster-of-Paris splint is applied along the posterior surface of the arm, running the strips parallel to the long axis, and encircling the wrist and arm three-fifths of its circumference. This splint is really a matter of very minor import.

As to fracture of the olecranon process, Murphy holds that there is no interposition of the aponeurosis as in fractures of the patella; that subcutaneous wiring is therefore indicated and entirely efficient. He uses phosphor-bronze wire because it is made up of many fine strands, size No. 12 strand cable. This wire is tied with a square knot and not twisted.

Concerning division of the brachial plexus, Murphy notes that no matter how long a nerve has been divided, if you recontact the ends without the intervention of connective tissue, you will have a regeneration in the distal axonal portions. This he has proved by one case of twenty-six years' standing. Contact must be absolute, since the axones will not penetrate any considerable depth of tissue and establish contact

except in the case of the trifacial nerve. In the trifacial nerve there is no distance that the axones will not span. It is a fairly recognized law that nerves have potency of regeneration in proportion to the size of their ganglia.

A Pott's fracture case which had healed

in very bad position with poor function was refractured, placed in proper position and nailed, with excellent results.

These clinics, representing as they do the latest and best in the art of surgery and presented with extraordinary vividness, are essential parts of the clinician's library.

#### CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

In the first week of October all the medical schools attached to the various hospitals of the metropolis started work for the winter session. At many of the hospitals the old custom of having an inaugural speech on the first day of the session is dying out, due, it is said, to the difficulty of finding speakers who can rise to the occasion in a suitable manner. In its stead comes the dinner to old students, and this method of celebrating the beginning of another year's work appears to have a larger appeal. The Dean of Charing Cross Hospital gave some interesting statistics as to the average number of students. Thirty years ago the average number of students commencing annually in England was 950, but in the last two years it had fallen to 566 for 1910 and 481 for 1911. The numbers have been affected by recent legislative changes, such as the abolition of pupilage and unqualified assistants, and more recently still the uncertainty produced by the Insurance Act has made parents unwilling to enter their sons in the profession. At University College Hospital School it was stated that steps were being taken to institute a memorial in the College and Hospital to Lord Lister, who was the medical school's most distinguished past student.

The most distinguished Freshman of the year is the Prince of Wales, who has just gone into residence at Oxford. He received a vigorous welcome from the other undergraduates. We fear he will not have much

opportunity to take part in the ordinary college life or to join in the "rags" so dear to the heart of the average Freshman.

The troubles of the Local Government Board over the Pure Milk Bill may disappear entirely if a discovery made by three German scientists turns out to be of any value. They claim that they can manufacture milk by machinery, and that the milk produced is superior in its nutritive powers to the ordinary cow's milk. The new milk is a synthetic product made from cereals and water, and the fats of the soy-bean and beet sugar bulk largely in it. chinery acts as a digestive apparatus on the cereal fats, and several hours' brewing is necessary. Analyses of this new substance are now being made in England, and if satisfactory a factory may be set up in London.

We have just received the record of the splendid successes achieved by Mr. Nathan Straus by his milk depot in New York. We wish that some philanthropic millionaire would follow his beneficent example in London, for the death roll here from summer diarrhea is always a heavy one, though this year naturally shows an improvement on last year, when the weather was so trying for small babies.

Nearly three years have elapsed since the Royal Commission on Divorce was appointed. The report has been expected for the last twelve months, but has been delayed again and again for various reasons. Now the report is to be published next month, and it is predicted that it will contain recommendations to alter the law so that legal fa-

cilities may be brought more readily within the reach of the poor. Whether any action will be taken upon the recommendations of the Commissioners depends entirely upon the decision of the government.

The Pure Food and Health Society of Great Britain held its annual meeting last week, and several of the speakers made a strong demand for the appointment of a Minister of Public Health. It was urged that there ought to be more control over the people's food, and that the present authorities were too much afraid of trade interests to really make a fight against adulteration and impurity. If a new authority could be set up under a Minister of Public Health, free from all commercial fear, it might be possible to assure that food sold to the poor is reasonably pure and free from contamination.

Considerable interest has been aroused by the announcement that a percentage of radium has been found in the water of some old wells at Clifton. These springs were extremely fashionable in the seventeenth and eighteenth centuries, but of late they have fallen into disrepute. If the springs are as valuable in medicinal properties as the first reports lead one to believe, Clifton may soon compare favorably with her old rival Bath.

It is reported that Dr. Myers Coplans has discovered a method of detecting icebergs long before a vessel comes within the danger zone. He worked on the fact that the conductivity of liquids varies with their temperature, and from this he has evolved a system by which he shows that the alteration of temperature in the water caused by an iceberg will give warning of its presence long before it can be sighted.

The position as regards the National Insurance Act remains unaltered. It is announced that the government intends to make certain concessions in the matter of

payments, but these reports have been circulated so often before that one begins to get a little skeptical. It is very doubtful if the government has really come to an understanding with those charged with the negotiations, and it is thought it will make proposals which will tend to break up the solidarity of the profession. In other words, it will offer terms which will be attractive enough to detach a number of the poorer practitioners from the main body. The Irish have discovered a novel method of punishing the doctors for not falling into line with the government demands. Dublin Guardians have adopted a resolution stating that, in consequence of the action of the Dublin Medical Committee in refusing attendance to members of friendly societies and the excessive demands of that committee, no bodies should be sent from the Union to the College or school anatomy for dissection. The Guardians are also taking legal opinion as to whether it will be possible to cancel their scheme of superannuation allowances for medical officers who have joined in the boycott of the Insurance Act.

Lord Rothschild has issued a special appeal for the British Red Cross Society to enable it to despatch expeditions to the combatants in the Balkans. The invested funds are only available for wars in which British troops are engaged, so that a special fund has to be raised in order to render assistance to foreign belligerents. The appeal points out that the war will be waged under conditions of intense hardship, as transport is a matter of great difficulty and the medical organization is quite inadequate to cope with the large number of wounded. Red Cross expeditions will, of course, give their services to all the combatants impartially, and in accordance with the Geneva Convention, sanction for them has been obtained at the Foreign Office.



# THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE.

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#### ORIGINAL COMMUNICATIONS.

THE RAPID AND RADICAL CURE OF AMEBIC DYSENTERY AND HEPATITIS BY THE HYPODERMIC INJECTION OF SOLUBLE SALTS OF EMETINE.

BY LEONARD ROGERS, M.D., F.R.C.P., I.M.S., Professor of Pathology, Calcutta.

In 1902 and 1903 I reported in the British Medical Journal the common occurrence of amebic dysentery in India, where it had not previously been recognized, and established its rôle as the cause of tropical or amebic abscess of the liver, the relationship of which to antecedent bowel disease was up to then much disputed in the East. Subsequent post-mortem experience has shown that in Calcutta amebic colitis causes considerably more deaths, both as a primary disease and through its hepatic and other complications, than the bacillary variety, while the same is true of Bombay. Recently I have been carefully investigating dysentery cases under my care at the Calcutta Medical College Hospital, and find that over two-thirds of them are amebic. the course of my investigations I learnt several years ago that ipecacuanha has a definitely specific action in the treatment of amebic disease, but is of little or no value in the bacillary type; while in 1907 I demonstrated that the same drug will rapidly cure an amebic hepatitis in the presuppurative stage, and thus prevent the formation of amebic liver abscess if given in good time. As a result of the last discovery the annual death-rate from abscess of the liver in the British army in India has been reduced within three years to only 30 per cent of its former steady number, and a similar decrease has taken place in the Calcutta European General Hospital.

Until recently ipecacuanha did not find favor with American physicians, but in 1909 Simon of New Orleans advocated it in large doses as a specific in amebic bowel disease, while Dock, Dudley Roberts in Brooklyn, and Brem and Zeiler in Panama have since confirmed this view. Deeks and Shaw, on the other hand, recently dismissed ipecacuanha as unworthy even of trial, as it did not appeal to "their physiological common sense." Presumably they were not aware of Vedder's experiments showing that emetine, the alkaloid of ipecacuanha. inhibits the growth of the dysentery bacillus and in a very high' dilution kills amebæ in bouillon cultures, and recommending the more frequent use of ipecacuanha containing a full amount of emetine in the treatment of dysenteries.

When analyzing a series of cases of amebic dysentery which had been treated by me with full doses of ipecacuanha, from 30 to 60 grains a day being given. I was struck by the fact that I had lost one-third of my cases, while another one-fourth had left hospital uncured, declining to go on with the treatment. The great majority of my patients were either very acute or advanced chronic cases, while several died within two days of admission, being hopeless on their first arrival at the hospital. In some serious cases the good effect of the drug was very evident, but nevertheless in many it was clear that sufficiently large

doses could not be administered by the mouth in time to save the graver cases. Recalling to mind Vedder's experiments with emetine on cultures of ameba, which may or may not have been pathogenic organisms (for many of the best workers still deny that the amœba dysenterica has been cultivated outside the body). I tested the effects of the very soluble emetine hydrochloride on undoubted amœba dysenterica in the mucous stools of amebic dysentery patients, and found that in a dilution of 1 in 10,000 it immediately produced physical changes in them visible under the microscope, while in higher dilutions it also appeared to kill them. I therefore determined to try the drug hypodermically in severe amebic colitis, expecting it to produce sickness, but only after it had entered the blood and had thus been able to exert its specific action on the amebæ in the body tissues. I had not long to wait before putting this idea into practice, with the remarkably successful results already recorded in the British Medical Journal of June 22 and August During the present monsoon 24, 1912. prevalence of amebic disease my rapidly increasing experience of the new method of treatment has been so very gratifying that I feel I should no longer delay in bringing it directly to the notice of the numerous readers of the THERAPEUTIC GA-ZETTE, so that it may be tested in the amebæ-infected Southern States as well as in the numerous other warm climates where amebic colitis has hitherto been such a serious and intractable disease.

The Administration and Dosage of Emetine Salts.—I have used both the hydrobromide and the hydrochloride of emetine with equal success, but now prefer the latter, because the hydrobromide is much less soluble in water, requiring about 2 Cc. to hold a full dose of the salt, and even then being liable to be deposited in crystalline form, although readily redissolved by gentle heat. The solutions can be safely boiled for a short time, but I prefer to boil the water or normal salt solution and then add the salt, and put up the doses required in

sterile glass ampoules ready for use. These are now supplied by both Parke, Davis & Co. and by Burroughs & Wellcome, the latter also manufacturing very convenient onethird-grain tabloids for making hypodermic I began with one-third-grain solutions. doses, equal to 30 grains of ipecacuanha, but now use half- or two-thirds-grain doses in adults, while one-third of a grain may be given with perfect safety in children of about eight years of age. I have several times given as much as a grain at once two or even three times a day in adults, and have never seen any depression or other alarming symptom follow its use. Very occasionally severe pain may result at the seat of injection, but this is quite exceptional, and there is usually no sign of any local reaction. Half a grain twice a day gives uniformly good results, or a larger dose once a day may be used if this is more convenient. The most remarkable fact, however, is that even the fullest doses never produce sickness and very rarely even any nausea.

It is therefore evident that the emetic action of the alkaloid is a local one on the stomach, and is probably produced by stimulating an excessive secretion of mucus, which is sooner or later vomited. This supposition will also explain the action of tannic acid in lessening the sickness due to ipecacuanha by inhibiting the secretion of mucus. In connection with the absence of sickness after hypodermic injections of emetine salts, it is very important to note that the drug has extremely little depressing effect, so can be given in full doses in severe cases of dysentery, or even after copious hemorrhages from the bowel, without fear of adding to the shock, for I have never seen any bad effects follow its use in such cases. I have also tried giving one or two one-third-grain tabloids of emetine hydrochloride by the mouth on an empty stomach, and allowing no food or water for three hours before and after it, and found that the drug is generally retained, or if any vomiting occurs it is not until after several hours, when most, at any rate, of the dose has been absorbed.

Thus given it is far easier to administer, and much better retained, than an equivalent amount of ipecacuanha powder, while it is more effective, and I have cured several cases of fairly mild amebic dysentery within four days by this method, although it is less rapid and lasting in its effects than by hypodermic use; for in one case a relapse occurred after a few days, which was quickly cured by injections of the emetine salt.

Results of the Emetine Treatment of Amebic Dysentery Compared with Those Obtained with Ipecacuanha.—In the papers already referred to I have recorded a number of very striking results in severe cases of amebic dysentery treated by hypodermic injections of soluble salts of emetine, but the true value of the method can only be judged by a comparison of a series of cases so treated with a similar series under the influence of full doses of ipecacuanha. The following data will supply this desideratum, being based on thirty cases of amebic dysentery under the ipecacuanha treatment and twenty-five since I began the new method, all under my own care in hospital, each series being composed of consecutive admissions without any selection whatever, and including a large proportion of both severe acute cases and of advanced chronic disease in greatly emaciated subjects. all the cases I found amebæ of the pathogenic type in the stools.

TABLE OF COMPARISON OF IPECACUANHA AND EMETINE TREATMENTS.

	Died.			Discharged otherwise.			
	Within 8 days.	After 8 days.	Of other disease.	Very bad.	Not cured.	Carred.	Total.
Ipecacuanha	4	7	-	2	4	18	80
Emetine salts	2	-	2	-	-	21	25

The very grave nature of the majority of the cases of amebic dysentery admitted to the Calcutta civil hospitals will be evident from the high mortality in the ipecacuanha series in the above table. The cases dying within three days of admission

are shown separately, because they were in a hopeless condition, with extensive sloughing or gangrene of the bowel, on admission. and often with local peritonitis as well, so that they were beyond the power of any treatment. As the mortality of any given series of cases will largely depend on the proportion of such cases, it is fairest to omit them from both in comparing the two treatments-an omission which will favor the ipecacuanha series, which contained the largest number of them. Again, under the heading of "died of other diseases" we have two cases in which some days after the complete cure of very chronic dysentery by emetine one patient died of heat-stroke in the night and the other, a very dropsical subject, developed cancrum oris, to which he succumbed ten days after recovery from his dysentery. These cases cannot rightly be classed as failures of the emetine treatment, for in reality they are remarkable examples of its efficacy in patients so enfeebled by advanced amebic colitis as to soon after succumb to the effects of debility; so these two cases may also rightly be excluded in estimating the mortality. This will leave 26 cases treated with ipecacuanha with 7 deaths (26.9 per cent) later than three days after admission; 6 discharged otherwise, two of them in a dying condition, a continuation of the treatment having been refused by the patients or their friends; and 13 (50 per cent) cured. If the two cases taken away in a very bad condition are included among the deaths they will then amount to 34.6 per cent. On the other hand, none of the non-moribund cases died under the emetine treatment, and only two of the total 25 cases died of dysentery, both within three days of admission, having been hopeless on their arrival. No patient was discharged otherwise, and 21 were cured.

On the whole, I think the emetine series was somewhat milder than the ipecacuanha one, so the following method of estimating the results of treatment is of interest. In nearly the whole of the cases I have made blood counts, with the result of demonstrating the extreme degrees of leucocytosis of

from 25,000 to 50,000 or even more are common in amebic disease, and furnish most important prognostic information. Thus, I have records of ten cases with such high white corpuscle counts in which ipecacuanha was given, but only two recovered, while four died in hospital and four were taken away uncured, three of which were in a bad condition. On the other hand, under the emetine treatment four out of five similar cases have been rapidly cured, the one fatal case showing a count of 61,750 leucocytes, and dying in less than twenty-four hours of admission.

Duration of the Treatment and Stay in Hospital.—Quite as striking is the rapidity of the cure by emetine salts. Thus in the series of cases shown in the above table the average stay in hospital of the recovering ipecacuanha cases was 16.4 days, and of the emetine ones 7.2 days, including one day they were kept under observation, if not urgent cases, before the treatment was be-. gun. Further, the average number of days under ipecacuanha before the stools became finally normal was 11.4, and the average amount of the drug given amounted to 406 grains; while the corresponding figures for the emetine treatment were respectively 2.35 days and 2 grains of the drug, equal to 180 grains of powdered ipecacuanha.

The Diagnostic Value of the Effects of Treatment by Emetine Salts Hypodermically.—The most remarkable and important fact with regard to the new treatment is that the blood and mucus nearly always finally disappear from the stools of an amebic dysentery patient within two or three days, four days being the longest period I have yet met with. In bacillary dysentery, on the contrary, the drug exerts little or no effect, so that the failure of the injections of emetine salts to produce a very material improvement in the stools within two or three days affords very strong evidence that the disease is not amebic in origin. In one such case, which was suspected clinically to be amebic, the failure both of the new treatment and of cultures for dysentery bacilli led to a careful examination of the rectum and the detection of cancer. Again, the amebæ disappear from the stools in twenty-four to forty-eight hours after emetine injections are begun, so the parasite should always be sought for before the drug is administered. The differential diagnostic value of the new treatment is far from being the least of its advantages, and should lead to the more rapid accumulation of knowledge as to the distribution of the various types of dysenteries than can be accumulated by bacteriological methods, owing to the fewness of laboratories in the tropics. I have never seen any harm result from the new treatment in bacillary cases. so that it can safely be used for diagnostic purposes.

Results of Emetine Treatment in Amebic Hepatitis and Liver Abscess.—In 1907 I showed that full doses of ipecacuanha given in the earlier stages of amebic hepatitis rapidly cured the condition and prevented the serious complication of liver abscess formation, and in June, 1909, I published further very favorable experience of this method in the THERAPEUTIC GAZETTE, and confirmation has since been forthcoming in the Philippine Islands and elsewhere. In my first two papers on the emetine treatment I have recorded cases showing that the hypodermic injection of the soluble salts of the active alkaloid of ipecacuanha removes the pain of an acute hepatitis in about twenty-four hours, reduces the temperature in a very few days, and, if suppuration has not already taken place, the leucocytosis also quickly subsides. In short, the new treatment is nearly as great an advance in amebic hepatitis as in amebic dysentery, and the emetine salts may be given for the former in similar doses to those already advised for the latter condition. Should leucocytosis persist for some time after the pain and fever have subsided, it is highly probable that an abscess is present in the liver, which had formed before the treatment was begun. In that case recent experience has shown that usually it is only necessary to remove the pus by aspiration, and to inject one grain of emetine

hydrochloride dissolved in about one ounce of water into the abscess cavity through the aspiration cannula before withdrawing it and sealing the puncture with collodion. If a full course of emetine has not already been given, half a grain should be injected subcutaneously twice a day for three days, commencing from the day after the aspiration. The pus withdrawn should be examined by culture for bacteria, and if it proves sterile it is highly probable that nothing further will be required, for the amebæ having all been killed by the emetine, the remains of the abscess will encyst; just as so often occurs as a result of my earlier treatment by aspiration and injection of quinine into liver abscesses, which should now be superseded by the more efficient method just described. Successful cases will be found recorded in the papers already referred to, and several further similar results have since been obtained. If the abscess is a very large one a second aspiration may be required after a week or ten days, as in the case of an old and very feeble Indian subject under the care of Lieut.-Colonel Nott, I.M.S., who kindly tried my treatment in this grave case, aspirating 80 ounces of pus at the first operation and 45 ounces ten days later, and injecting emetine, with complete recovery. If secondary extensive coccal infection has taken place the abscess must be opened and drained, while in one sterile case in which the abscess had already invaded the subcutaneous tissues over the ribs the cavity refilled after aspiration and it had to be opened and drained, with eventual recovery.

In one case in which the pain and fever of a very acute hepatitis subsided under the influence of emetine injections, but leucocytosis persisted, ten ounces of pus were removed by simple aspiration, no more emetine being used, and complete recovery ensued without further trouble, the leucocytosis also disappearing. If my present experience is confirmed by further cases it appears probable that in the large number of amebic liver abscesses which are free from secondary bacterial infection—which

amount to 85 per cent of the whole in my Calcutta experience—incision and drainage will not in future be often required, greatly to the comfort of the patient, and also with a marked reduction in the mortality of this very serious disease.

Do Emetine Injections Kill All the Amebæ and Prevent Relapses?—This allimportant question remains to be discussed, and although it is still too early to give a final answer, yet some important evidence regarding it has already accumulated. my paper in the British Medical Journal of August 24 I recorded one case in which a patient died of gangrene of the cecum after all amebæ had disappeared from the stools under the influence of two days' injections of emetine, and in whom post-mortem no trace of amebæ could be found even on sectioning the amebic ulcers in the large bowel; and a second case in which death occurred from very numerous small liver abscesses secondary to amebic dysentery, in which after two days' emetine treatment the amebæ had disappeared from both the bowel wall and the liver abscesses. These cases showed that the amebæ rapidly disappear from all the infected body tissues under the new treatment, but there still remains the possibility that a few may survive and subsequently bring about a relapse; just as occurs after the treatment of malaria, sleeping sickness, and syphilis after the respective specific treatments for each. I have, therefore, been endeavoring to follow up my cases after they leave hospital, and so far the only two in which an apparent relapse has occurred are the following:

In the first a very severe attack of amebic dysentery, which ipecacuanha had failed to control, cleared up as a result of two injections of half a grain of emetine hydrochloride on each of three successive days. He returned three weeks after leaving hospital suffering from diarrhea, but without amebæ in the stool, and died in three days, left basal pneumonia being found post-mortem. The upper half of the large bowel was distended and its wall greatly thinned in places and adherent to surrounding structures,

while its mucous membrane showed extensive thin scars of healed ulcers, but no recent lesions, and the liver contained a small encysted abscess, also free from amebæ. Thus three days' emetine treatment had brought about healing of very extensive amebic ulcers (although not able to replace all the lost tissues), and had also sterilized and led to the encystment of a liver abscess. A second patient in my ward was apparently cured of a chronic amebic dysentery by onegrain doses of the same salt on three successive days, but returned four weeks later with severe dysentery and died the next day, no amebæ having been found in the stools on his second admission. mortem extensive healed scars of amebic dysentery were found in the upper part of his large intestine, and typical lesions of acute bacillary dysentery in the lower half, from which cultures of Shiga's bacillus were obtained. Here, again, the amebic disease had been rapidly and radically cured, so these two apparent relapses in reality furnish the strongest evidence that the new method of treatment can completely sterilize the whole of the tissues of the body as far as pathogenic amebæ are

concerned, and afford good ground for hoping that at last a simple drug has been found which will absolutely rid the human system of a deadly protozoal parasite.

I have recently found that the emetine hydrochloride can be safely injected intravenously in considerable doses. Thus in a patient with very marked thickening of the cecum, with great tenderness due to local peritonitis, I gave first half a grain of the drug dissolved in 5 Cc. of normal saline injected very slowly into the median basilic vein without the slightest depressing effect on the pulse, while the same evening I gave two-thirds of a grain and a day later a onegrain dose in the same way, in addition to several subcutaneous ones. Although large black sloughs were being passed, the dysenteric symptoms rapidly cleared up and the right iliac swelling disappeared, but unfortunately, when apparently convalescent, he had a very severe hemorrhage, and is not yet "out of the woods." Whatever the ultimate outcome of this case may be, it is still clear that in such extremely severe ones some time can be gained by the intravenous method of administering the drug, which is therefore indicated in such acute attacks of amebic disease.

#### ATOPHAN IN THE TREATMENT OF GOUT.1

BY GEORGE L. KAHLO, M.D., WHITE SULPHUR SPRINGS, WEST VIRGINIA, Professor Clinical Medicine, Indiana University School of Medicine; Ex-President Indiana State Medical Association.

The association of disturbances of intestinal and hepatic function with manifestations of arthritism and other forms of abnormal metabolism has long been observed, and the importance of enterogenic intoxications in the etiology of gout and certain cutaneous and neuralgic conditions is now quite generally recognized. So also are the ultimate results of these influences in the production of cardiovascular and renal changes, which mark the decadence of the organism as a whole.

Whether the retention in the system of uric acid, which both in the popular and

treatment involves both a correction of abnormal digestion and the elimination of toxic material. Dietetic regulation, mineral waters, baths, exercise, and massage are undoubtedly our most reliable therapeutic resources in effecting a cure, while colchicum and salicylic acid have occupied first place among medici-

nal agents in the relief of symptoms. Unfortunately, however, the use of the latter

remedies is sometimes attended by certain

unfavorable effects upon digestion, hence

professional mind is more or less intimately

connected with goutiness, is the result of

renal insufficiency or of a special predispo-

sition of the tissues themselves, successful

<sup>1</sup>Read before the American Gastro-Enterological Association, Atlantic City, June 4, 1912.

while beneficial in one direction, they may, at the same time, only serve to perpetuate the cause.

A little over a year ago my attention was called to a new preparation known as atophan (discovered by Nicolaier), which, it is claimed, is a definite chemical substance of the following formula: 2 phenyl-chinolin and 4 carboxylic acid. Since that time I have used this remedy almost exclusively in a type of cases in which I had heretofore employed colchicum or the salicylates. The results obtained have been most gratifying, equaling apparently in every respect the published reports of other clinicians, whose investigations are doubtless already familiar to you.

Altogether I have employed it in 48 cases. All of them were in adult life and as a rule in affluent circumstances; 21 were men and 26 women. Among predisposing causes luxurious and sedentary habits were apparently of much greater importance than the influences of inheritance.

Twenty-five of these cases were of acute gout, in its typical form, the arthritis involving the great toe, the knee-joint, the heel, or fingers. Fifteen were of the neuro-arthritic type, in which the neuritis affected principally the sciatic, tibial, and brachial nerves. These also were of an acute or subacute form.

Three of the cases were of chronic gout, in which there were present articular enlargements and a history of recurring acute paroxysms, but no pain at the time. I have also treated in the same way four cases of acute articular rheumatism and one of arthritis deformans.

Among the 43 cases of gout, six presented complications in the form of eczema or psoriasis, and in six glycosuria or diabetes was present. A tendency to obesity was a very common association.

In every case of gout in its typical form the administration of atophan was followed by a reduction in temperature and a lessening of the pain and swelling within a very few hours, and in practically all by a complete subsidence of these symptoms in from twenty-four to forty-eight hours. A large majority of these patients had been treated by colchicum, the salicylates, aspirin, etc., and almost without exception they stated that the relief obtained from atophan was greater than that from remedies previously employed. In quite a few cases in which more or less acute symptoms had been present for some time the results seemed truly remarkable.

The results in cases of neuritis were for the most part excellent, although perhaps a little less prompt and decisive than in the arthritic type. Four of these patients complained of gastric disturbances which were apparently due to the atophan. Hyperchlorhydria was present in each case, and they were all of an extremely neurasthenic type. In two this was relieved by the conjoined administration of sodium bicarbonate and magnesium. In the others the atophan had to be discontinued.

Gastric or intestinal symptoms were already present in practically every case in which atophan was used, but were not unfavorably influenced, except in the instances referred to.

An improvement in the cutaneous complications, as well as in the symptom of glycosuria, was coincident with that of the arthritism. In this connection, however, allowances must be made for the fact that in many of these cases the administration of atophan was accompanied by the use of mineral waters, dietetic restrictions, and baths—the bath usually employed being the Aix douche.

In the absence of acute or subacute symptoms the effect of atophan was apparently more or less negligible, although the period in which such cases were under observation and the difficulty in estimating the results from other treatment were such that I hardly feel warranted in expressing any opinion on this subject. Only one of the four cases of acute articular rheumatism seemed to find any particular relief from the atophan treatment.

The case of rheumatoid arthritis was of an unusually severe and acute type. The patient, a very intelligent young man, stated that atophan gave him more relief from the pain than anything that he had previously used, and that it was not accompanied by any unfavorable effect. He has now been using this remedy more or less continuously for about a year and reports that he is more comfortable and has better use of the joints involved, although there is no appreciable difference in the nodosities. He has gained 14 pounds in weight.

I have also tried atophan in a number of cases of gouty sore throat and in the coryzas which not uncommonly develop as a result of eliminative treatment. Almost uniformly good results were obtained in such cases.

Repeated laboratory investigations of the urinary excretions have shown that atophan undoubtedly increases the amount of amorphous urates and uric acid crystals even when proteids have been entirely excluded from the diet.

Atophan is dispensed in tablet form, each tablet containing 7½ grains of the drug. These readily disintegrate in water, but are insoluble. The dose varies from 30 to 60 grains per day. In most cases I have pre-

scribed one tablet after each meal and at bedtime. When the symptoms were unusually severe I have given two tablets at the same interval, or one every two or three hours.

Summarizing these observations, I would say that we have in atophan a most valuable remedy for the treatment of gouty manifestations of a manifold type, more reliable in its action and freer from objectionable features than any other agent with which I am familiar. It is in such cases. I think. sufficient of a specific to be of value from a diagnostic standpoint as well, and I have never observed that it has any depressing It is hardly to be expected that equally good results should be obtained in the treatment of rheumatism. I hope to be able to carry these investigations still further, and perhaps at some future time to make a subsequent report from which more positive conclusions can be drawn.

Quite recently the manufacturers of atophan have put out a new preparation called novatophan, which, it is claimed, is free from any tendency to produce gastric disturbances. With this I have not as yet had any personal experience.

### QUININE AND UREA HYDROCHLORIDE IN TRIFACIAL NEURALGIA—A PRE-LIMINARY NOTE.

BY HANSELL CRENSHAW, M.D.,

Neurologist to the Hospital for Nervous Diseases, and to the Wesley Memorial Hospital, Atlanta, Ga.

One of the knotty problems for the neurologist to solve is facial neuralgia, particularly those cases of it which have been the rounds for years with little or no relief. Such cases usually give histories of having resisted various anodynes, of having received only temporary benefit from surgical interference, and of having necessitated opium habituation. Accordingly any new measure which promises to afford even temporary relief to victims of this stubborn and torturing condition without danger to them should be regarded as important and deserving of full consideration.

On July 4, 1912, I successfully employed

subcutaneous injections of quinine and urea hydrochloride for the relief of a case of trifacial neuralgia of fourteen years' standing. This case had resisted all the usual remedial means, including resection of the sensory root of the trifacial nerve. Also cutaneous injection of cocaine was one of the measures which had failed to prove practicable in this case. A brief account of the case and its treatment in my hands follows:

The patient, Mrs. T., was referred to me by Drs. Campbell and Ridley of Atlanta on June 28, at which time she was suffering an agony of pain in that portion of the face to which the infraorbital nerve is distrib-

uted. The side of her nose and infraorbital region of her face were quite red from recent counter-irritants which another physician had applied. At this time she told of the various efforts at relieving her suffering during the past fourteen years, in which time a number of good men had worked on her case. Also she gave a history of long residence in the delta region of the Mississippi River, including some vears at New Orleans: but evinced no suggestion of malaria other than neuralgia. She had strenuously resisted opium all these years, and requested me particularly not to prescribe it for her. The present attack had lasted about five months, while previous attacks had lasted from a few weeks to several months each, and had been separated by intervals of spontaneous relief of several weeks' duration.

Thinking of the possible malarial origin of the trouble, I prescribed capsules each containing four grains of quinine and three grains of phenacetine to be administered at intervals of four hours. Three days of this medication proving absolutely futile, a combination of quinine, aspirin, and codeine was then tried for three days; but this, likewise, failed to afford any relief worthy of note. So on July 4 I decided to try subcutaneous injections of quinine and urea hydrochloride. The patient was placed in the recumbent posture, the infraorbital region of the face was sponged off with alcohol, and a sterile hypodermic syringe provided with an extra long needle was filled from an ampoule containing five cubic centimeters of one-per-cent solution of quinine and urea hydrochloride (Parke, Davis & Co.). The needle was then inserted through the skin near the ala of the nose and slipped upward beneath the skin along the side of the nose for perhaps an inch. A small portion of the solution was then injected, and the needle withdrawn a fraction of an inch before injecting a further portion; and so on until a beaded line was left by the series of subcutaneous injections. Next the needle was again introduced at a point about one

inch further down on the cheek and just where the infraorbital nerve emerges from the foramen. The needle was again slipped up under the skin and the solution distributed by withdrawing the needle slightly after each partial injection. The infraorbital region of the face was then mildly massaged, and within thirty-five minutes the patient began to experience pronounced relief. At the end of three-quarters of an hour she left the office entirely free from pain. This was at 4 P.M., and she had an excellent night's rest and remained free from pain throughout the following day. At about 4 P.M. on the third day, however, she began to experience twinges of neuralgic pain and the injection was repeated. This time she went four days without a return of the neuralgia. Nevertheless, a third injection was made on the fourth day. At the end of a full week a few twinges in the deeper tissues of the jaw were experienced, when the fourth and last injection was made and afforded seemingly permanent relief, inasmuch as up to the present time there has been no return of the neuralgia.

The intramuscular injection proved a little troublesome by leaving a lump in the tissues, which has not yet wholly disappeared.

I had hoped to have other cases to report along with the one here presented before bringing this suggestion before the profession; but after waiting several weeks without the prospect of a further opportunity to try the measure, I have decided to present this single case-history for what it is worth, hoping that others will give quinine and urea hydrochloride injections a trial and report whether success or failure attends its use.

My attention was called to the persistent anesthesia obtainable from quinine and urea hydrochloride by the reports of the excellent results obtained from the use of this anesthetic in rectal work. These reports show that the anesthesia often persisted several days, so as to render the process of repair painless instead of extremely painful,

as is the case when cocaine is used in operations involving the sphincter.

I am well aware of the fact that neuralgia is prone to disappear spontaneously for a while; but the fact that this patient was relieved from pain when the solution was injected, together with the fact that subsequent twinges were immediately relieved by injections, leads one to believe that the persistent local anesthetic effect of this solution achieved the result. Of course we must not overlook the possibility that the relief may have been in a measure psychic; but in my experience genuine neuralgia is not very amenable to psychotherapy.

1027 CANDLER BLDG.

## REVIEW OF SOME MEDICAL PAPERS READ AT THE SCRANTON MEETING OF THE PENNSYLVANIA STATE MEDICAL ASSOCIATION.<sup>1</sup>

BY HERMAN B. ALLYN, M.D., PHILADELPHIA.

The President, Dr. James Tyson, delivered an address which was a comprehensive review of the progress of medicine within his professional memory. It was a valuable contribution to medical history, and for that reason will not bear abstracting, but will have to be read to be fully appreciated.

Francis Fisher Kane, Esq., then discussed "Medical Expert Testimony from a Legal Standpoint." Medical expert testimony is essential. Both court and jury need it. But it is still in disrepute. What we need is the real opinion of the witness, not that opinion swayed by improper influences. The witness should testify, not argue as an advocate. He should not take sides, nor should he act as coach of the lawyer or of witnesses. Under the present plan he is asked to serve two masters—an impossible position. The fault lies not with the testimony, but with our use of it.

Remedies are to be found in the limitation of the number of experts and their payment by the court. The hypothetical question should be prohibited. There should also be a more strict definition of what constitutes an expert.

Dr. F. X. Dercum discussed the question from the medical point of view. The expert witness is called upon to draw inferences from the facts presented. The qualifications of the witness should be brought out by the counsel on each side. In that way the jury will not be deceived or the testimony of the witness be given undue

weight by them. Unfortunately not every witness has a judicial temperament. expert's duty begins before the trial. should give the counsel a full and free statement of his opinion on the facts presented. Then the counsel can determine whether the expert should be called or not. Moreover, the expert should review the facts and see if any other conclusion is justified. Before the court and jury the expert should confine himself to the facts and to his own investigations, and should translate everything into simple language easily understood by the jury. Differences of opinion are perfectly legitimate and may be perfectly honest, and such differences of opinion do not justify the contempt sometimes evinced for such testimony by laymen.

Dr. Baldy thought that the witness must in justice to himself let the counsel know what he can testify to, and that he must become an advocate in order to defend his opinions. Dr. Dercum believes that if experts were appointed by the court there might be more uniformity of opinion but less of truth. Let us have the truth and let the jury decide.

Dr. Charles H. Frazier, in his paper on "The Pituitary Body in Disease and the Results of Surgical Intervention," noted that the hypophysis consists of three parts, anterior, posterior, and intermediate, each probably having functions. The hypophysis is a gland. Acromegaly has been associated with its disease. Three groups of disorders are described: (1) characterized by hyper-

<sup>&</sup>lt;sup>1</sup>September 24-27, 1912

secretion; (2) characterized by hyposecretion: (3) combinations of these, or the effects of pressure. Acromegaly is caused by a hypersecretion, probably of the anterior Hyposecretion results in underdevelopment of bone, atrichosis, by development of fat, by a large appetite—a state of infantilism. Sometimes there is polyuria, due to hyposecretion of the posterior lobe. Sometimes there are only neighborhood symptoms-ocular disturbances, mental deterioration, violent headache, nausea, listlessness, even well-defined insanity, psychical disturbances and epilepsy, the latter in one-sixth of the cases.

Thirty per cent of the fatal operative cases have been due to meningitis. For this reason Dr. Frazier does not favor the transsphenoidal operation, but operates through the anterior fossa. In the operative cases improvement occurs in sixty per cent, the mortality being twenty per cent of the cases. Dr. Litchfield said that operation was done especially for the pressure symptoms, especially bitemporal hemianopsia, particularly of the outer fields. There should not be in most cases any doubt as to the diagnosis—the feminine type of figure, etc., should at once arouse suspicion.

Dr. Posey thought ophthalmologists recognized the disease but were in some doubt as to the propriety of recommending operation. Dr. Johnston referred to the fact that x-ray pictures do not always show the lesion. Dr. Dercum now has all his cases of epilepsy x-rayed to show the sella turcica. It is surprising in how many cases there is enlargement of the sella.

Oskar Klotz, reading on "The Medical Profession, Public Opinion, and Animal Experimentation," discussed in a general form the reasons why animal experimentation is essential to medical progress. We are not working with reactions which are definite and exact, such as chemical reactions, but with complex biological phenomena, which make many observations by many workers necessary before we have at hand the material necessary to try deduction of broad, fundamental principles. The use of the term "vivisection" is to be de-

plored; there is no such thing as vivisection without an anesthetic. It was only by the use of the lower animals that the true nature of disease was discovered. We have not reached the floodtide of experimental work; the field opens more widely with every new discovery in therapeutics and physiology and chemistry. The public does not take time to view the matter impartially; the profession must take time to help educate the public.

In this discussion Dr. Sweet said that the address of the President, Dr. Tyson, was a critical review of the progress of medicine, which progress had depended entirely upon animal experiment. All of the events in medicine of the last fifty years can be traced back to the four fundamental postulates established by Robert Koch. To prove that a given organism is the cause of a given disease one must: (1) Find the organism in every case of the disease; (2) tissues or tissue-fluid from the patient must reproduce the disease when injected into the body of a susceptible animal; (3) the suspected organism must be cultivated in pure culture from the body of this animal; and (4) this pure culture must reproduce the disease when injected into another susceptible animan. Two of these four postulates demand an animal experiment, and there is no other Without this bacteriology would have become merely a branch of botany instead of the corner-stone of modern medical practice. It often seems strange that experimenting members have to appear before the profession to plead their cause. We are here to-day because of criticism—criticism of the public and criticism of the profession. The public criticizes because it does not know and does not take the time to learn. From the profession we hear two criticisms: first, that animals are wasted-too many are used. Now in the pounds of the Commonwealth there are probably 25,000 dogs killed every year simply to get rid of them; as long, then, as there is this amount of material which should be available, there can be no talk of a waste of animal life. If any teacher of physiology or pharmacology thinks he can teach his students anything by

the use of this material he has a perfect right to his uncriticized belief; the question becomes one of pedagogics. The other criticism that I hear is that so much experimentation is foolish; but if there be among you one who has not discovered at the autopsy table that his line of reasoning, both in diagnosis and in treatment, was perfectly foolish, he is either very fortunate or very young.

Dr. Ginsburg spoke of the activities of the antivivisectionists and the way in which they are permitted to go on, unchallenged by the profession. At Atlantic City this summer an exhibit was conducted of which two young boys were in charge, who were continually telling things which were deliberate lies. Dr. Ginsburg urged the profession to make some effort to stop this continued circulation of wilful misstatements.

Dr. Heard told why the committee had thought it advisable to put this paper on the general programme. The laboratory men must be supported by the profession.

In the evening there was a lantern-slide demonstration of the uses of the Roentgenray in neurology, by Dr. George E. Pfähler, and moving pictures of nervous diseases by Dr. Weisenburg. Both were admirably presented and much enjoyed by the audience.

The Section in Medicine opened on Tuesday afternoon with a symposium on "Myocardium and Mechanism of the Heart-beat." The address of the chairman, Dr. Charles H. Miner, referred to the frequent lack of harmony between clinical observations and pathological anatomy.

The "Mechanism of the Heart-beat" was discussed by Dr. Charles Claude Guthrie. The fundamental mechanism of the heart is not fully understood. It depends upon proper nutrition of the heart muscle. Without discussing claims of myogenists and neurogenists, it will suffice to say that probably both are partly right. Rate of the heart is largely controlled by extrinsic and intrinsic mechanism, consisting of an inhibiting (vagus) and an accelerating (sympathetic) mechanism. Most agree that the bundle of His, which connects auricles and ventricles, bears a peculiar relationship to

conduction. As yet it is not possible to say whether tissue of the bundle is muscular or nervous.

H. G. Schleiter, of Pittsburg, Pa., noted that through instruments of precision (polygraph and electrocardiograph) the question of disordered heart rhythm has been placed on a rational basis, and the physician has been given the satisfaction of real knowledge. They have influenced prognosis and made it more exact; they have clearly indicated lines for treatment and abolished the promiscuous use of so-called cardiac remedies and tonics; they have stimulated an immense amount of research.

The Mackenzie polygraph by its simplicity and the use of a long paper roll with ink record, has greatly widened the field of clinical investigation. The function of the polygraph is to correlate the activities of the upper and lower chambers of the heart. The jugular tracing, besides recording events corresponding to those in the radial tracings, shows the contractions of the right auricle.

The electrocardiograph records photographically electric changes in the heart's muscle resulting from contractions. It shows in a single curve events taking place in the auricles and in the ventricles. Curves above the base line represent base negativity. Curves below the base line represent apex negativity. The shape of an electric wave shows also the focus whence contraction arises.

The following conditions on which light has been thrown by polygraph and electrocardiograph investigations were discussed: Hypertrophy of the right or of the left ventricle, hypertrophy of the auricles, diminution of contractility, transposition of the heart, disturbances referred to the right or left branches of the bundle of His, abnormal rhythms (including phasic variations, premature contractions, paroxysmal tachycardia, heart-block, auricular fibrillation), and the relation of chloroform vapors to the production of ventricular fibrillation.

Dr. James E. Talley read a paper on "Auricular Fibrillation," characterized, he

stated, by potential paralysis of the auricle and total irregularity of the ventricle. The auricle stands in diastole, but its wall is the seat of constant, fine, rapid, undulatory but ineffectual movements. About 70 per cent of cases show an antecedent history of rheumatism or chorea. The remainder occur later in life and are associated with sclerosis. It may occur with any valve lesion, but is as rare with uncomplicated aortic disease as it is common with mitral stenosis.

Of all patients admitted to the hospitals with cardiac failure perhaps 60 to 70 per cent would be found to be fibrillating. The only anatomical change is a microscopic degenerative change predominating in the auricle, and it is common to hearts that have not fibrillated also. The symptoms are largely those of ordinary cardiac failure.

The diagnosis in cases with a slow pulserate may be accurately made only with the polygraph and the electrocardiograph tracings. They show complete irregularity of the arterial pulse associated with the ventricular form of venous pulse. In the patient with rapid pulse-rate certain general rules have been deduced from experience with the above instruments of precision which makes us fairly sure of the diagnosis.

The marked irregularity of the radial pulse would be found even more evident at the apex. The rate may be fast or slow, and there is a haphazard succession of strong and weak pulse-beats. Many beats fail to reach the radial. When the irregular arterial pulse is above 120 it is due to auricular fibrillation in the majority of cases. A rapid, irregular pulse accompanying serious signs and symptoms of heart failure is usually due to auricular fibrillation. The comparison of auricular fibrillation and other irregularities, as extrasystoles and partial heart-block, offers interesting contrasts. Auricular fibrillation is persistent, the others show intervals of regular rhythm. Exercise increases irregularity of the former and abolishes the irregularity of the latter. After exercise the irregularity of the auricular fibrillation gradually decreases; under similar circumstances the irregularity of the latter returns. Fever and drugs of the belladona group increase the irregularity of auricular fibrillation and diminish the irregularity of the latter.

Treatment.—A patient with auricular fibrillation and a previous history of rheumatism, especially if in his earlier decades, is a promising subject for treatment. Here a good tincture or fresh infusion of digitalis acts like a charm: 10 to 15 minims of the tincture three to four times a day, or one or two drachms of the infusion at the same intervals, is sufficient. The rate of the heartbeat is the best guide to its administration. A patient with little distress and only on exertion, whose pulse-rate is around 80, needs directions ordering his mode of life, but no digitalis as yet. When fibrillating a patient with a pulse exceeding 100 while at rest needs digitalis. It should be pushed until the pulse slows to about 70 or the physiologic limit is reached. The drugs should always be stopped at 70 or at the sign of the physiologic limit, as headache, nausea, vertigo, possibly diarrhea, and coupling of pulse-beats. Some cases will remain well after a course of digitalis until a new stress causes another breakdown. Other patients will need smaller doses continuously when they get around. In others even large doses fail to have any effect at all; these are likely to get little good from any known treatment.

Where digitalis cannot be borne by the stomach tincture of strophanthus or tincture of scilla may be substituted. In patients with acute attacks of auricular fibrillation with pulse-rate of 150 and above, large doses of digitalis, 20 to 30 minims three times a day by the mouth, should be given, and because of its immediate effect gr. 1/250 of strophanthin by intravenous injection should be given every two hours until the pulse-rate is slowed somewhat and the patient's condition is improved. The pulse may be reduced from 150 to 90 to 100 in six to twelve hours.

Dr. George W. Norris, of Philadelphia, in discussing the "Infectious Febrile Heart" said that it may present lesions either gross or microscopic. It may

show sinus irregularity, heart-block, or extra systoles. Lesions of the suprarenal glands are found sometimes. Murmurs are not of much importance in diagnosis. Increase of pulse-rate, muffling of heart sounds, and fever are of much more importance. There may be hyperpyrexia. The condition of the blood-pressure is of more importance than heart weakness. As to treatment, it may be indirect or direct. The indirect consists in lessening toxemia by fresh air, by continuous or interrupted enteroclysis, by abundance of water, and by evacuations of the bowels. Sufficient sleep must be provided for. Cold sponging stimulates the central nervous system. Tympanites may need treatment. Direct treatment consists in the employment of specific treatment for the infection whenever possible. Low blood-pressure may be helped by adrenalin, but not much. Of much more value are hot mustard foot-baths and frictions of the extremities; they help to restore vasomotor tone. An ice-bag to the precardia is helpful. Strychnine should be reserved for a crisis. Caffeine may increase restlessness. Camphor is of service. On the contrary, the digitalis group of drugs is of no use.

Dr. M. Howard Fussell read a paper upon "The Use of Digitalis." The preparations in the shops are often not to be depended upon. Tablets of the tincture and of digitalin are, in his experience, of no value. The tincture should not be over a year old and should be made from reliable leaves, and be physiologically tested. A fat-free tincture may be used hypodermically. The infusion must be freshly made before use from tested leaves. When so made it is the best diuretic preparation we have.

In general the special preparations of digitalis are not to be depended upon. Digalen is of value, but is not free from bad effects (abscess and pain) when given hypodermically. Digitalone is of a good deal of value, but when old it is irritating, whether of value or not. His advice as to choice of preparation is to use a good fat-

free tincture or a fresh infusion. The local nauseating action on the stomach is the most common ill effect.

The great indication for digitalis is cardiac decomposition without regard to the particular valve lesion that may be associated with it.

Valvular disease without symptoms is not an indication for digitalis. In diagnosis always employ inspection, palpation, and percussion before auscultation. Disturbance of rhythm is more important to detect than murmurs. Finally, certain cases of high pressure are benefited by digitalis.

The discussion upon these papers and upon various aspects of heart disease was opened by Dr. Hobart A. Hare. He remarked that under the myogenic theory every contraction arises from the primitive node, the auriculoventricular node. Moreover, every man with valvular disease of the heart has also some disease of the myocardium, the degree of disease varying. This helps to explain why some patients respond to the administration of digitalis and some do not. In some the vagus can be affected by digitalis, and in some it can not.

In examining hearts inspection and palpation should be employed more than they are. There are advantages in auscultating through a thin towel rather than through a stethoscope, as by the former method one not only hears the beat of the heart but also feels the thrust of the ventricle.

In employing remedies for blood-pressure we should not expect the whole blood-pressure to be raised; the aim should be to equalize it. In this respect both alcohol and the cold bath do the same thing.

Dr. James M. Anders said that he still thought with reference to cardiac rhythm that both neurogenic and myogenic theories were partly right. He suggested that in every case we should try to correlate the muscle functions with the clinical symptoms.

As regards auricular fibrillation he made two points, that it may arise suddenly and that the prognosis in the majority of cases may be guardedly favorable if the patient will be reasonably quiet.

In the treatment of infectious febrile

heart he has found friction of the extremities and the application of heat beneficial.

In Adams-Stokes' disease we should discriminate between functional and organic cases and not be too pessimistic in prognosis.

Dr. Riesman, referring to the use of digitalis, said that our treatment had been hitherto too much from the anatomic and too little from the functional point of view. When compensation is lost digitalis is useful whether one or many valves, even the aortic valve, be affected. Even in Adams-Stokes' disease, if the heart be dilated and there is dropsy, digitalis may be of service. Morphine also is often of service. Apparent Adams-Stokes' disease may in reality be petit mal.

Dr. Klotz suggested the term "heart flutter" as preferable to fibrillation.

Dr. Robertson said that the use of instruments of precision such as the polygraph sharpened the perceptions of the operator. Digitalis sometimes causes cardiac psychosis. He has seen several maniacal outbreaks follow the use of digitalis. If the pulse does not slow down after the patient is put to bed digitalis is not likely to be of service.

Dr. Schleiter does not find digitalis effective unless the rhythm is disturbed.

Dr. Talley said that when the pulse suddenly increases in frequency in spite of digitalis the patient is not getting enough. He should be given strophanthin intravenously until larger doses of digitalis given by the mouth can have time to affect the patient's heart.

In a suggestive experimental paper on "The Relation of Animal Fat to Tubercle Bacilli Fat," Dr. William C. White, of Pittsburg, called attention to the subcutaneous deposit of fat as an important index of progress of cases of pulmonary tuberculosis. He had found that in growing tubercle bacilli the human strain was stimulated by human fat and the bovine strain by bovine fat. He suggested that the fat content might have something to do with the site of the invasion of the tubercle bacillus. The upper lobe in man and the caudal lobe in cattle are each the highest part of the lung in the usual standing position of the animal. The first paper of a symposium on affections capable of producing acute epigastric pain was by Dr. Silas D. Molyneux, of Sayre, on "The Diagnosis and Treatment of Gastric and Duodenal Ulcers."

The mechanical action of acid chyme is undoubtedly a factor in the cause of ulcer. Most ulcers occur toward the pylorus. While hyperchlorhydria is commonly it is not invariably present. There is usually a long history of gastric distress extending over years. The nearer to the pylorus the ulcer is the more characteristic the symptoms. Pain after eating is the most constant symptom. There is no possible way to tell which ulcer will heal, which will perforate, or which will become the seat of malignant disease.

Duodenal ulcers are more common than gastric ulcers. They are characterized by pain occurring at a definite time after food is taken, by gas formation, and also by the relief which follows the taking of food and alkalies; also by vomiting and eructations. Vomiting, a later symptom, usually occurs two to five hours after food, the amount not being large. It may not occur oftener than once in one to three days. Hemorrhage is not infrequent, but is not necessary to diagnosis. Ninety per cent of hemorrhages heal spontaneously. Constipation is present in 90 per cent of cases. In later stages there is failure in nutrition.

Gall-bladder disease has in many respects similar symptoms. Pain, vomiting, and jaundice may be present in both. Pain is more radiating in disease of the gallbladder. It is independent of the taking of food. Chills and fever may occur. Gas formation is greater than in ulcer. Vomiting does not give relief as it does in ulcer. There is jaundice in 25 per cent of cases. Constipation is less pronounced. nant disease develops in 70 per cent of cases of ulcer. Treatment in acute cases: starvation, rectal feeding, etc. Surgical, in chronic contracted saddle-back and duodenal: excision or inversion and posterior gastroenterostomy.

Reading on "The Early Diagnosis of Cancer of the Stomach," Dr. John H. Mus-

ser, Jr., observed that the importance of this may be realized when it is known that 16,500 deaths from cancer of the stomach occurred in 1910 (42 per cent of all lethal cancers arising in this organ). From analyses of the first symptoms of sixty-nine cases of cancer of the stomach we find the onset of symptoms was either (1) acute (39 per cent), (2) subacute (32 per cent), or (3) chronic (29 per cent). Group one is made up of those patients whose first complaint was pain or who began to have pain in a short time after the onset of symptoms. The importance of pain as a symptom cannot be overestimated. Pain as an early symptom, one of the first three complaints, was noted in 60 per cent of the

Group two includes those patients who, previously free from indigestion, are suddenly affected. This group is the accepted criterion of the symptomatology of gastric carcinoma. In this group vomiting occurred seven times as the initial symptom. Vomiting as an early symptom is only somewhat less important than pain. It was one of the first three symptoms in 43 per cent of this series. Group three includes the cases which have had indigestion for years. No apparent change occurs in the gastric symptoms, and the disease is not suspected until progressive loss of weight and strength is noted. In a few of the cases increased flatulency, diarrhea or constipation, vomiting, and hematemesis marked the apparent onset of symptoms, referable to the organic disease.

Other methods of arriving at a diagnosis are through the use of the stomach-tube, showing a decrease in the secretory and motor functions of the stomach. The x-ray, particularly the combined use of plate and screen, is of noteworthy value. Examination of the stools in the present series showed the presence of occult blood in 65 per cent of the cases. Gastroscopy is of doubtful value. Many of the specific tests for cancer in general, and cancer of the stomach in particular, have been proved to possess a certain value, and while it cannot be said that these are pathognomonic, still

they yield information that is most suggestive. In the early diagnosis of cancer of the stomach no one symptom or group of symptoms is sufficient to make the diagnosis, which can only be attained by a careful study of the many suggestive findings arrived at by the employment of the stomach-tube, the x-ray, and the specific laboratory tests.

Dr. Joseph Sailer read a paper on "Affections of the Hepatic and Epigastric Regions which May Cause Pain." He said that pain in the hepatic region may be due to pleurisy, to the nerves of the lower thorax, to acute endocarditis, and to pneumonia and pneumothorax, but only when the pleura is involved. There may also be lesions of the ribs and spine, causing nerve pain reflected to the hepatic region. There may also be hepatic crises of tabes. Other causes of pain in this region are appendicitis, gastric and duodenal ulcer, cancer of the stomach, tumor of the colon, abscess of the liver and pancreatitis. Moreover, certain conditions of the liver causing stretching of the capsule have to be considered: obstruction partial or complete of the bile duct, rupture of the gall-bladder and ducts, extension of inflammation to the neighboring peritoneum, and finally Ewald's hepatalgia, which, while doubtless very rare, is included as a possibility.

Dr. Wm. S. Newcomet read a paper on "Visceral Ptosis," based upon x-ray examinations. Pictures were thrown upon a screen and the various displacements pointed out. In discussing this paper Dr. Rugh advocated for the relief of the condition a corset made with a solid back and reenforced in front by a band fastened to each side of the corset at about the anterior axillary line and meeting in front over the lower abdomen. He asserted that the viscera were hold up by it, and x-ray pictures indicated it.

Dr. John H. Jopson read a paper on "The Surgical Aspects of Epigastric Pain." Pain is evidence of the existence of some intraabdominal disorder, and often also points to the location of the disease. Pain calling for surgical intervention may be due to gallstones or to stone in the kidney. One may simulate the other, but in the author's experience, where there was doubt before the operation, gall-stones were generally found to be the cause. Other causes to be considered are subphrenic abscess, perforation of the gall-bladder, and perforation of a gastric ulcer. Here the previous history, the location of the pain, and the presence or absence of shock are important aids in diagnosis.

Dr. Henry D. Jump, reading a paper on "The Thyroid Gland in Obesity," maintained that physiological studies have shown that the thyroid causes a destructive metabolism of fats and proteids with a consequent diuresis and loss of weight. The catabolism attacks tissues in the following order: fats, circulatory proteids, tissue proteids. With such knowledge the use of the gland in reducing obesity became common. Commercial preparations, depending upon thyroid for their efficiency, were put upon the market. The indiscreet use of the gland in this way caused a considerable amount

of harm. The points against its use are its indeterminate action upon the heart, which is prone to be adversely affected, and the tendency to destroy tissue proteids or mus-Before the standardization of the product which has produced the official glandula thyroidea sicca, different manufacturers produced preparations of different strengths. The dose of this official preparation is one-half to one grain three times a day. Larger doses may be used. form of obesity which is best suited to treatment by the gland is the constitutional form, in which patients become fat through a lack of sufficient catabolism and not caused by overeating or underexercise. The signs of overdosage are breathlessness. tachycardia, and weakness. If overdosage be persisted in, very serious results may occur. If stopped, the patient will soon recover and the treatment may be continued in a smaller dose. The patient, as a rule, must subject himself to recurrent treatments with the gland. A patient taking thyroid should be well fed on proteids, and sugar should be excluded from the diet.

### SURGICAL WORK PRESENTED BEFORE THE MEETING OF THE PENNSYL-VANIA STATE MEDICAL SOCIETY.

BY EDWARD MARTIN, M.D., PHILADELPHIA, Professor of Surgery, University of Pennsylvania.

The surgical contributions read to the State Medical Society were characterized by such thoroughness of preparation, clearness of presentation, and a direct application to the needs of daily practice as made those who attended the meetings and remained till their close well satisfied that the time had been most wisely and helpfully spent.

Dr. Americus R. Allen, of Carlisle, read the first paper, reporting many cases of cervical tubercular adenitis cured by tuberculin injections. These he supplemented by careful removal or ablation of the ordinary foci of infection, and by close attention to general hygiene and by that careful personal attention which the patients of all enthusiasts receive when they are being subjected to a method of treatment which is comparatively new and in which their doctor is establishing growing confidence. In the discussion which followed, led by Dr. George M. Dorrance, of Philadelphia, the feeling was generally expressed that the tuberculin injections have not proven of general service; that they should be administered only by those thoroughly skilled in their use and conversant with the undesirable effects they sometimes produce; that therefore they should not be routinely employed. Dorrance expressed himself as much better satisfied with the results from x-ray treatment, and voiced the general sentiment as to the possibility of converting a latent localized tuberculosis into an actively and widely diffused one.

This attitude of skepticism toward the safe and curative action of tuberculin was further reënforced by Dr. David Silver, of Pittsburg, in a paper entitled "Vaccine Therapy in Tubercular Bone and Joint Disease"—an admirable and dispassionate study of results, voicing a willingness to accept further light upon the subject, discouragement as to any pronounced benefit, and regret concerning some undesirable effects.

A most serviceable paper on "Acute Osteomyelitis" was read by Dr. John Gibbon, of Philadelphia, likening this disease to acute appendicitis, and claiming for it the same prompt recognition and immediate treatment by drainage. The primal localization in the diaphyseal ends of the long bones, and particularly near the upper end of the femur and the lower end of the tibia, he brought out, emphasizing the fact that acute articular rheumatism or other joint affections never begin in this region. He noted that many disastrous results are due to the circumstance that the surgeon opening for evacuation of pus is content when that lying beneath the periosteum is evacuated, and leaves entirely unrelieved by his operation the real seat of tension, the cancellous structure or the medulla. He further called attention to the fact that many of these cases, even in their early stages, were accompanied by an effusion of fluid into the joint, this because of the juxtaepiphyseal location of the primary infection, and urged that this complication should not lead to diagnostic error and operative tragedy.

Dr. Estes, in commenting on this paper, with full accord in its teachings, observed that in his own experience the lower femoral and upper tibial diaphyses were most frequently involved.

Dr. Evan W. Meredith, of Pittsburg, read a paper upon "Inguinal Hernia in Children," urging the invariable treatment by operation after the sixth month. He thought trusses both dangerous and useless at any time. He thinks that starvation and purgation are especially to be avoided as predisposing to

acetonuria, as characterized by rapid pulse without fever, vomiting, and apathy. A small dose of castor oil is given the night before and one feeding is omitted. The operation was described as one of great ease and consisted in simply isolating and tying off the sac without aponeurotic or muscular division. The anchor dressing is used, this consisting of three or four silkworm-gut sutures introduced through the skin and fat, tied over a roll of gauze and dusted with boric acid powder. There is no subsequent restraint of the patient, the after-treatment being less troublesome than that of circumcision.

Edward B. Hodge, Jr., of Philadelphia, pointed out that the operation was not always as simple and easy as the reader of the paper seemed to consider, and held that the truss has a distinct place in the treatment of the children of watchful, intelligent mothers, not only palliating but at times radically curing.

John B. Singley, of Pittsburg, read a paper upon the "Operative Technique of Strangulated Hernia." He laid special stress upon the importance of local anesthesia, preliminary irrigation of the stomach in case general anesthesia be used, the need of making roomy incisions, and the frequency with which pneumonia follows these operations.

Dr. DeForest P. Willard, of Philadelphia, read a paper upon the "Treatment of Flatfoot," this being a plea against the insole. Attention was called to the fact that as dispensed from the shoe store insoles are usually injurious rather than helpful. He pointed out that early attention to the arch in such conditions as rickets, injury, and postfebrile asthenia will prevent deformity. In the treatment there are four indications to meet: To strengthen weakened muscles; to allow the foot to assume the normal position; to relieve strain on muscles by throwing the line of weight bearing on the outer side of the foot; to support the arch until the muscles are ready to take on their full work.

The proper shoe must have a high upper,

a straight last, broad, rigid shank, a broad, low heel (Thomas type), stiff counter under the arch, if necessary the addition of an inner wedge of leather to the sole and heel, 1/8 to 5/8 inch at inner border, tapering gradually as it approaches the outer side. Also felt or leather arch pads may be needed. The unyielding arch support or insole is useful only in certain well-advanced types of cases, and then only when accurately fitted by means of a plaster mold. Strengthening of muscles is the only permanent cure. Insoles are at best temporary supports and decrease rather than increase the chances of ultimate recovery.

Drs. Charles K. Mills and Edward Martin reported a case of paraplegia in Hodg-kin's disease, which was treated by laminectomy and the Roentgen rays, with betterment, the interesting feature being that the spinal cord was infiltrated and not merely pressed upon.

Dr. J. Stewart Rodman, of Philadelphia, reported a number of interesting cases illustrating phases of cerebral surgery, one in particular, a large extradural clot causing complete hemiplegia, being removed by an osteoplastic resection, which he advocates in these cases. Another of carcinoma of the vertebra with resection of the posterior roots, with marked relief from pain.

Dr. William L. Clark, of Philadelphia, described high-frequency desiccation and reported an admirably illustrated number of cases in which it had been successfully applied. He commends fulguration immediately after cancer treatment, and by no means belittles the service rendered by the knife, but holds that the electric method is of inestimable value under some conditions not reachable by operation, and for some where the operative scar would be disfiguring. Among other of his pictures were two cases of tattooing almost entirely removed by the current and showing but slight blemish of the large areas which thus had been treated.

Dr. R. Tunstall Taylor, of Baltimore, read a paper upon "Restoring Mobility in Ankylosis of the Joints." After calling at-

tention to the inadequacy and the difficulty of the many methods heretofore proposed, he reported cases in which he had used absorbable animal substances, particularly the preparation made by yellow wax 1 part, cacao butter 2 parts, lanolin 2 parts, and bismuth 15 grains to the ounce. This represents a distinctly simplified technique; it enables passive motion to be begun at the earliest possible moment and with the minimum of pain, and if further trial corroborates the results already obtained it will be a most valuable contribution to the subject of joint surgery. He is using now just enough of the wax mixture to coat over the eroded areas of the articulation. He makes a horseshoe-shaped skin incision and a linear cut through the capsule under this flap in order to prevent the wax mixture from getting into the skin incision. He has done ten cases of bony ankylosis and believes in the method, particularly in old healed tubercular joints, and in those ankylosed as a result of traumatic or gonorrheal arthritis.

Dr. F. E. Keene, of Philadelphia, read a paper on "The Value of Pyelography in the Diagnosis of Surgical Disease of the Kidney." This he considers an important adjunct to other renal tests. Dilatations of the renal pelvis, whether mechanical or inflammatory, are readily demonstrable and can often be clearly differentiated; in the former the dilatation is characterized by its symmetry, with sharp definition of the calyces and pelvis; in the latter, the picture is irregular in contour, often with detached shadows which show poorly defined outlines and mark the site of cortical abscesses. In the diagnosis of intermittent hydronephrosis, this method is infinitely superior to the older methods, which are inaccurate and subject to several fallacies. The differentiation of intra- and extra-ureteral shadows is simplified by this procedure in that the abrupt dilatation above the shadow proves it to be cast by an obstruction within the ureter. The method is likewise of value in determining between an intra- and extrarenal shadow by studying the relationship between it and that of the pelvis. Valuable information may be obtained in the diagnosis of a symptomatic movable kidney by the actual demonstration of a kink in the ureter at or near its junction with the pelvis. In about one-third of renal neoplasms there is either retraction of the calyces or compression of the pelvis, depending on the direction of the tumor growth; these can be nicely shown in the pyelograph.

Edward Martin presented a paper upon the present status of "606," which was really a plea for the 914 or neosalvarsan preparation, because of its ease in administration, lesser toxicity, and at least equal efficiency. The futility of single doses of arsenical preparations was pointed out. It was held that syphilis is often entirely curable by properly graduated courses of arsenic supplemented by mercury, as proven by the constantly increasing number of syphilitic reinfections published, and it was further maintained that the Ehrlich preparations have so firmly established their value that they should be adopted habitually as a part of the routine treatment of syphilis, the success in so far as radical cure is concerned being directly proportionate to the timeliness of their use. The need of immediate spinal puncture and saline solution injections when the anaphylactoid symptoms develop immediately or shortly after injection was pointed out. Dr. H. R. Loux expresses himself in full accord with this teaching, basing his conclusion upon an experience with many hundred injections. Dr. Nathaniel Ginsburg graphically portrayed the technical difficulties which needle puncture may present in individual cases even to the experienced.

The Commission on the Prevention of Venereal Disease, through its chairman, Edward Martin, presented the following resolutions, which were unanimously indorsed by the Surgical Section:

Resolved, That the House of Delegates be asked to appoint a committee of three, the function of which shall be

1. To take measures for the introduction into the public school curriculum of a systematized course of instruction upon the causes, avoidance, and prevention of contagious diseases, including under this heading those commonly termed venereal.

- 2. To urge upon the proper health authorities provision for the sequestration of those suffering from contagious diseases and to frame and present acts if these be needful which shall legalize detention of the infected as long as may be needed in the interests of public safety.
- 3. To secure legislation having for its end the requirement of a medical certificate as to freedom from contagious disease before the issuance of a marriage license.
- 4. To secure legislation having for its end the castration of congenital idiots, habitual criminals, and the criminally insane.

The Commission on the End Results of Fracture of the Femur, through its chairman, Dr. William L. Estes, presented an unusually able and illuminating report representing the study which has been carried on for several years based on 788 cases reported. It is found that an anesthetic was not used in reducing the majority of cases; that the average amount of traction used in extension methods was 14 pounds; that the middle region of the bone was most frequently fractured, the break as a rule being a simple one; that the average shortening when the patient was first seen was 1.38 inches; and that nearly all cases were treated by Buck's extension or a modification of this method. The mortality in the total number is 3.69 per cent, which Estes regarded as distinctly too low, he thinking that this figure might certainly be doubled if all cases be taken. Pneumonia, shock in the aged, and delirium tremens were the most common causes of death. Only a small percentage had been x-rayed, and only a very small percentage had been carefully studied in any way. Estes dwells upon the fact that as a rule too little traction is used, that these cases are not carefully followed either while under treatment or thereafter, and that disability is usually more prolonged than would be suspected from a study of the statistical records. As to the amount of permanent disability, he notes that only 20 per cent exhibited good endurance.

The Report of the Commission on Cancer, presented by its chairman, J. H. C.

Wainwright, of Scranton, evidenced the steady, efficient work which has been done by this committee. They have been chiefly concerned in educational work in the last year, with special bearing upon the early recognition of malignant disease. have induced county societies to set aside one or more meetings to a special study of cancer, and have asked professors in various colleges to devote one or more lectures to impress upon students to be constantly on the watch for the early signs of cancer and to insist upon its immediate operative treatment, and have asked training schools to establish such courses for their nurses with special reference to the uterus and breast: so that the nurse should know the exact significance of a lump in the breast or irregular vaginal bleeding, etc. It will be remembered that the Commission last year reported an astonishing percentage of surface cancers which had been under treatment of physicians for months or years before they were referred for surgical treatment.

Dr. Joseph H. Farrar reported an ulcerating breast carcinoma successfully removed by the Halstead method.

Dr. Ernest Laplace, in his paper on "Traumatic Thrombosis of the Mesenteric Artery and Vein," reviewed briefly and clearly this unfortunate and important surgical condition, and made a strong plea for an early exploratory incision. The case he reported started and developed, showing but slight clinical symptoms, though an incision exposed two feet of gangrenous ileum. Dr. L. J. Hammond in his comments alluded to the 240 cases reported by Jackson with 47 operations, giving a mortality of 92 per cent. He noted the absence of any pathognomonic sign and attached importance to diffuse abdominal pain, rigidity, bloodstained vomiting, and diarrhea with bloody stools. He held that even early operation offered comparatively little chance in extensive cases, and recommended that where a gangrenous area was not positively defined the part should be so brought out in the incision as to include healthy gut and be there

anchored until a certain demarcation was established. Dr. George Erety Shoemaker of Philadelphia, Dr. Estes of South Bethlehem, and Dr. Edward Martin each contributed a case in which recovery had ensued, the thrombosis having involved the vein alone.

Dr. J. Edwin Sweet read a paper upon "High Intestinal Obstruction, Postoperative Ileus, and Acute Pancreatitis." He noted that the work of all writers on high obstruction has led to the conclusion that some toxic agent, undetermined, is the cause of the characteristic symptoms. The source of this poison can evidently be in but two places—the mucosa of the upper gut or the pancreas. Since the clinical picture of acute pancreatitis and high obstruction is the same; since normal pancreatic juice and normal pancreas substance are exceedingly toxic; since the cause of death in acute pancreatitis is the resorption of these toxic pancreatic ferments; since the pancreas and adrenals are related in interaction and the adrenals are found severely injured in high obstruction; since the peculiar shock of the same conditions under discussion, their most striking feature, could be explained by a loss of adrenal products, it is concluded that these conditions are so nearly alike clinically because they are all caused by the resorption of pancreatic ferments; and that the treatment indicated in postoperative ileus, and in high obstruction and acute pancreatitis, until operative intervention is possible, is the continuous intravenous administration of adrenalin in saline, not to raise blood-pressure alone, but to supply the adrenalin which is essential to life. This paper is possibly epoch-making, both from the standpoint of etiology and treatment, and falls more in line with the true physiology of shock than any recent contribution to this subject.

Dr. L. J. Hammond contributed an admirable study of pyloric stenosis, with especial reference to the benign type. He attributed the condition to defect in embryological development of the tissues alone, or associated with a faulty position of some

of the near-by organs. Anatomically it consists of a reduplication of the mucous membrane intermixed with muscular fibers, forming a definite ring with the function of dilatation and contraction, and constantly exposed to irritation of digestive disorders. He regards as the dominant symptom persistent vomiting or regurgitation immediately or shortly after eating, with stomach peristalsis. He believes that spasm depends upon the degree of hypertrophy, though the latter may be moderate and the spasm intense. He regards the transition into malignancy as a grave danger and strongly urges that medical treatment should be persisted in only sufficiently long to establish Posterior gastrojejunostomy meets the greater number of indications, pylorectomy the remainder.

Dr. Herbert Gibby, of Wilkes-Barre, in commenting on this paper, reported two cases in adults, both diagnosed as gallstones. On section muscular hypertrophy was found. One of these cases supported Dr. Hammond's contention as to congenital deformity being an etiological factor in the fact that there was an absence of both ovaries and a very small uterus. The patients were both cured by the Finney operation.

Dr. Herbert D. Gardner, of Scranton, reported the case of a woman to whom he was called because of prostrating pain, for the relief of which he gave a hypodermic of morphine. He was shortly after startled by a noise like the tearing of wet flannel, and in a few moments by the death of the patient. The autopsy showed a greatly dilated stomach with a recent 3-inch rupture in it and a complete obstruction of the pylorus, incident to muscular contraction secondary to ulceration. Dr. Ernest Laplace, of Philadelphia, accentuated Dr. Hammond's contention as to pylorospasm predisposing to cancer, and urged in no case waiting more than three or four months under medical treatment. He further pointed out that the pylorospasm may bring on acute gastric dilatation.

Dr. Samuel Robinson, of Boston, reading

on the subject of pulmonary surgery, strongly advocated the use of local anesthesia whenever practicable, citing instances of rib resection done with this agent with entire success. Where general anesthesia is needful he prefers the intratracheal method. He particularly insisted upon thorough exploration in case of suspected lung abscess, and anesthesia of the pleura to make this possible. The drainage of empyemata should be continuously efficient. In cases of chronic empyema he contended that a cavity of not more than eight ounces can usually be rendered sterile by bismuth injections and closed with good results. He expressed skepticism as to the interlobular empyema. For bronchiectasis he advocated compression by nitrogen, to be followed by needle resection.

Dr. Joseph Sailer and Dr. Robert G. Torrey read a paper on intrathoracic tumors, containing the reports of a series of cases and emphasizing certain signs, particularly supraclavicular fulness and percussion tenderness. They regarded sarcoma as an operable condition, carcinoma as the reverse, and urged that care be taken in diagnosing secondary growths, which are common, as thus may be prevented needless expense for sanitarium treatment.

Dr. Wayne Babcock, of Philadelphia, contributed a scholarly, conservative, and lucid paper upon the "Technique of Thoracic Operations," discussing the advantages of the one- and two-stage operations, methods of hemostasis, the control of secondary pneumothorax, the treatment of dead spaces, and the treatment of emergency during operation.

In the discussion of these papers Dr. Jopson, of Philadelphia, cited several cases of interlobular empyema in the service of the Children's Hospital and alluded to the question of proper drainage in some detail. Dr. Alfred Hand, of Philadelphia, strongly commends the use of nitrous oxide or ethyl chloride in exploring for empyema in children. Dr. T. Turner Thomas, of Philadelphia, insisted upon drainage through the lowest part of the empyema cavity, as determined by probing from a counter-opening above.

Dr. Armstrong, of White Haven, regarded pneumothorax as a valuable adjunct to treatment in selected cases of tuberculosis.

He noted that his autopsies showed that it was rare to find adhesions in the lateral midaspect of the lung, the pleural space becoming obliterated first at the apices and the extreme bases. The injecting needle should therefore be thrust in to the space which longer remains free.

# SYNOPSIS OF WORK DONE IN SECTION ON DISEASES OF THE EYE, EAR, THROAT, AND NOSE—PENNSYLVANIA STATE MEDICAL ASSOCIATION.

BY DR. WM. CAMPBELL POSEY, PHILADELPHIA, Chairman of the Executive Committee of the Section.

Dr. Wendell Reber, of Philadelphia, read a paper on "The Teaching of Ophthalmology in America," having in mind suggestions which might raise the standard of ophthalmic practice. Dr. Reber proposes to extend the term of postgraduate instruction to three months, six months, or even a year. In the event of either of the longer terms, the conferring of a "Degree in Ophthalmology" upon production of satisfactory evidence that the work had been done. At the end of this time a certificate of credit for three months' work could be furnished the student: and if he later desired to add six months of further work and postgraduate instruction in the same or another institution, he might then be eligible for examination for some manner of degree in ophthalmology. This implies an agreement of some sort between postgraduate institutions.

If the nine months' term (or working year) idea were generally adopted it would afford a teaching staff abundant opportunity for a comprehensive course that might justify the conferring of a degree such as "Doctor of Ophthalmology." Other things being equal, the possessors of such a degree would soon become recognized by the discerning people in their respective communities as men of unusual training.

There are in this country at the present writing about fourteen well-recognized postgraduate institutions. There should be brought about some agreement among them as to the minimum training required of applicants for examination, and some ap-

proach to uniformity in the ordering of a three and a six months' course.

Dr. Reber holds that thoroughgoing ophthalmic instruction is to-day best obtained in a postgraduate institution with its attached clinic or clinics, the one exception being in the case of those few men who may attach themselves for a period of years to a well-organized ophthalmic clinic in their own cities.

No applicant for postgraduate teaching should be admitted to any of the well-recognized specialty courses who has not completed three years in general practice or its equivalent in general hospital work.

Dr. F. Park Lewis, of Buffalo, N. Y. by invitation read a paper on "Sight Saving as a National Movement." He called attention to the fact that emphasis must be placed upon the great value of preventive measures as compared with curative ones. He urged the importance, moreover, of not only saving eyes from blindness, but of preserving as much sight as possible in certain conditions where the loss of a fractional portion of sight would mean the ruin of a life. The unwillingness of men to accept precautionary measures which employers were willing to adopt was recognized, but this so far from preventing efforts on these lines should be an added stimulus to the development of more intelligent measures.

It was recommended that if on the first page of each school-book might be placed simple directions as to the proper care of the eyes, it would be of help to the young student and even to the teacher. In regard to ophthalmia neonatorum four recommendations were made:

- 1. Every birth should be promptly reported, preferably as in England, within thirty-six hours.
- 2. Every inflamed eye in a new-born child must be reported at once.
- 3. The Department of Public Health must be vested with authority to take care of all such children as are not receiving care—at once—and should make complete report from time to time of the number of cases of ophthalmia neonatorum, with an exact statement of the end results.
- 4. The failure to report existing cases must be so effectually penalized as to compel all attendants, medical or otherwise, to report them, so that the department may have at least as adequate a knowledge of them as it now has of scarlet fever, diphtheria, smallpox, or other infectious diseases.

The educational measures—through lectures, circulars, public exhibits, etc.—the demand on the birth report as to whether a prophylactic has been employed, even the gratuitous distribution of the prophylactic, important as these are, are all secondary and subsidiary to the enactment of suitable laws and the development of a public sentiment that will insure their enforcement.

When penalties are exacted for the neglect of a public service, justice requires that there should be some remuneration for that service when it is performed.

Dr. William W. Blair, of Pittsburg, in dealing with "Eye Injuries Incident to Occupation," notes that many of these may be avoided by the installation of preventive devices. As to the importance of prevention, it is pointed out that mill injuries are of a very grave nature, a large proportion of which go on to destructive inflammation with consequent loss of the injured organ or organs in spite of so-called "first aid," and the best of hospital treatment and care is frequently unavailing.

The simplest and most frequent form of injury is the foreign body on the cornea.

This class of cases should receive expert care from the start, the mill surgeon being called at the earliest moment, and the case at no time being entrusted to the care of the shop foreman, who has no realization of the serious nature of an extensive corneal abrasion.

Shop foremen should be required to see that all hammer and sledge heads as well as the heads of cutting tools be dressed at frequent, regular intervals, as from these cracked and furred surfaces and angles chips frequently fly into the eyes of near-by workmen.

All chipping of castings and pipe sections should be carried on behind burlap screens—this for the protection of passing fellow workmen, the men who are actually engaged in the work wearing some form of protective goggles.

Numerous photographs were shown illustrating various devices for protection from emery wheels, lathes, and saws; also the various methods of protecting the eyes from excessive light, as in the process of electric welding, the pouring of Babbitt and other metals.

In conclusion the attention of physicians is especially called to the importance of projected workingmen's insurance laws, and the close connection between such legislative acts and accident prevention.

Dr. Wm. Campbell Posey, of Philadelphia, in his paper on "The Effect of Artificial Light upon the Eyes and Some Means of Determining the Same," gave the details of a series of experiments which would be carried out during the winter by a committee of scientists, with a view to determining the effect of different forms of artificial light upon the eyes. Groups of 50 men or more will be subjected to various forms of illumination, a careful test being made of the eyes prior to the use of the eyes under such illuminants, and a second test some four or five months later. Among the standards chosen by the committee will be a comparison between the effects of an ordinary student oil lamp and an ordinary tungsten lamp.

An effort will also be made to obtain some definite data regarding the effect on the eve of the direct and indirect sources of illumination. The speaker gave a résumé of what is already known regarding the effect of various forms of artificial light upon the eyes, and said that while there was some reason to believe that ultraviolet rays might be responsible for cataract and certain other intraocular lesions, it was the experience of investigators that injury from any of them is not likely to be received in any casual or accidental manner. When under extraordinary conditions it is desirable to cut off all of the ultraviolet rays, this is best done by amber glass.

Dr. Edw. B. Heckel, of Pittsburg, Pa., in his paper on "Ophthalmia Neonatorum and its Relation to Blindness," referred to the malignancy of this type of inflammation and its causation of many cases of blindness. He is rather of the impression, however, that the number of cases is decreasing, due to prophylactic measures. He points out that much good has been done by legislation, both at home and abroad, and states that there are now laws relative to the control of the disease in twenty-five of our States.

He exhibited a series of handbills issued by the Pittsburg Board of Health to practitioners and midwives, and also a little bottle containing one-per-cent solution of silver nitrate. These are dispensed gratis to all desiring them by the Pittsburg authorities.

After a careful study of the question of "Trachoma in its Relation to Blindness," Dr. Clarence P. Franklin, of Philadelphia, stated that there is sufficient trachoma in the United States to present a problem that slight neglect might increase to troublesome proportions. He dwelt upon the necessity of excluding trachoma from our ports. The present State laws regarding the regulation of trachoma are inadequate, and he begged for proper supervision of all cases of trachoma by competent medical officers.

In commenting on Dr. Franklin's paper, Dr. Stieren, of Pittsburg, said that much may be accomplished by warning patients with trachoma, and exhibited a series of printed instructions which he made use of among foreign patients in Pittsburg, means for the prevention and restriction of the disease being printed in many languages. Dr. Stieren thought rubbing the palpebral conjunctiva with 1:500 bichloride solution was the best form of treatment.

Dr. Harris, of Johnstown, thought trachoma was increasing among the foreign population in his neighborhood.

Dr. Zentmayer read a paper on "The Sociological Aspect of Errors of Refraction." He said the causative effect of errors of refraction could be traced in few serious diseases of the eye, but hyperopic eyes are prone to glaucoma, and eye-strain is a possible factor in the production of sataract, Normal eyes or eyes rendered so by optical or surgical treatment were considered essential to the full efficiency of the individual. The effect of eye-strain in retarding the progress of the child at school and the possibility of such a condition causing truancy, idleness, and crime were dwelt upon. Its effect upon mental processes was shown in the introspective and studious habits of myopes. The possibility of ametropia being a cause of reflex epilepsy was discussed. The importance of good vision secured by glasses where necessary, to diminish the risk of accidents in connection with workingmen's compensation laws, was pointed out, and a like necessity to prevent loss of life through mistaking of signals in those entrusted with human life. Among the suggestions considered timely were: That corporations or others employing large office forces would aid in the efficiency of such by compelling the correction of errors of refraction when of sufficient degree to interfere with the proper performance of work. That there should be a State law compelling the thorough examination of the eyes of children in school by competent ophthalmol-That a campaign of education of the public should at once be started as to the danger of entrusting the examination of the eyes and the treatment of defective vision to those whose only qualification is their assurance and their only aim the successful accomplishment of a business transaction.

This ended the symposium on the Conservation of Vision. Subsequently the House of Delegates created a State Commission on Conservation of Vision, which will have charge of all matters referred to in the preceding papers. This commission has been appointed by the outgoing president of the society and will soon be organized, and it is hoped may be able to put some of the suggestions made by the writers into force. Its membership is as follows: Dr. Wm. Campbell Posey, chairman; Dr. Clarence P. Franklin, Dr. William W. Blair, Dr. T. B. Holloway, Dr. Clarence M. Harris, Dr. Edward B. Heckel, Dr. Wendell Reber, Dr. Lewis H. Taylor, Dr. Edward Stieren, Dr. William Zentmayer.

Dr. John E. Weeks, of New York, the guest of the Section, opened the meeting on Wednesday afternoon by a paper on the "Surgical Treatment of Glaucoma." He gave a careful review of all of the procedures now employed to relieve intraocular tension, and stated that of the newer operations he preferred that of La Grange, having performed this operation upon 83 cases, usually with good results.

In the discussion, Dr. Risley dwelt upon the value of simple iridectomy, while Dr. Posey extolled the La Grange procedure also. He also favored Heine's operation where there was danger of intraocular hemorrhage.

Henry M. Goddard, M.D., of Philadelphia, writing upon "The Diagnostic and Therapeutic Value of Needle Puncture of the Maxillary Sinus," called attention to this procedure accomplished by means of the Lichtwitz needle and the attending ease with which it is performed. He went carefully into the technique of the procedure and dwelt upon the sources of failure. He believes there is no method which gives more reliable results than the introduction of such a needle beneath the inferior turbinate into the sinus. Very frequently the mere introduction of the needle and the injection of air will convince one by the odor

emitted that putrefactive changes have already taken place within the cavity.

Attention was called to the peculiar bubbling noise which arises when air is forced through the exudate in the sinus. This sound is regarded as pathognomonic of sinus disease.

If no change either in the amount or consistency of the secretion from the sinus or the subjective symptoms of the patient is apparent after puncture with lavage, it becomes necessary to consider one of the various forms of intranasal operations.

In conclusion, Dr. Goddard referred to a number of dangerous sequelæ which have arisen after this procedure. He considers, however, that if it be properly carried out it is free from danger, as he has had no alarming symptoms to arise in many hundreds of cases.

Dr. E. B. Gleason, of Philadelphia, in discussing the "Treatment of Suppuration of the Antrum of Highmore," thought that the teeth are responsible for antral suppuration in from three to thirty per cent of all cases. He called attention to the fact that many cases of facial neuralgia are associated with antral suppuration, by reason of the course of the second division of the trifacial nerve and the proximity of Meckel's ganglion. As spontaneous resolution usually occurs in acute catarrhal cases. the result of transient closure of the ostium maxillare, treatment of this class of cases should be of the most simple character. He, too, favors the employment of a Lichtwitz needle in removing accumulation from the antrum. He has lately employed normal salt solutions alone in the lavage of the sinus. In very obstinate cases ample drainage from the antrum may be secured by a large opening beneath the inferior turbinate with or without the removal of its anterior The inferior turbinate, however, should not be removed unless it is diseased.

Dr. Skillern spoke of the value of the needle puncture not only for therapeutic reasons, but also for diagnostic purposes.

Dr. O'Reilly favored the preturbinal

method of entering the antrum, its value being in the conservation of the inferior turbinate, and the facility which it affords of inspecting all parts of the antrum.

John F. Culp, M.D., of Harrisburg, Pa., in his paper on "Drainage of the Accessory Sinuses in Atrophic Rhinitis," called attention to the fact that a very considerable proportion of atrophic rhinitis cases show more or less empyema of the larger sinuses, especially the sphenoid and maxillary. Good drainage of these affected cavities, with subsequent cleansing treatment, most of which can be done by the patients in their own homes, effects symptomatic cures.

Of the many theories advanced relative to the causative factors of atrophic rhinitis, with the frequent subsequent ozena, that of Grunewald, to the effect that this disease is always caused by infection of the accessory sinuses, is the most popular one at present. Histories were given of a number of typical cases, with their apparent symptomatic cure.

Dr. Culp believes that we will finally produce an autogenous vaccine which will be curative. Until some better treatment is devised, the thorough drainage of the larger sinuses is the only logical treatment.

Dr. Corson has seen cases of rhinitis cured by freeing adhesions between the middle turbinate and septum.

Dr. Chas. P. Grayson, of Philadelphia, in a paper upon "The Exploratory Opening of the Sphenoid Sinus," spoke of the necessity of avoiding injury to the nasomucous membrane in operations upon the sinuses. and argued for the discontinuance of the usual manner of entering the sphenoid sinus, on account of the unavoidable injury to the middle turbinate. He enters the sinus himself by introducing a hand drill at the lower and internal portion of the anterior walls of the sinus. This procedure is done without pain, hemorrhage, or shock to the patient. A dependent portion of the sinuses is opened, and in the event that the sinus is found to be unaffected, prompt healing follows.

Dr. Howard F. Pyfer, of Norristown, Pa., read a paper on "Etiology of Phlyctenular Conjunctivitis." He has been struck by the number of these cases which resisted recognized standard treatment. He tried the Von Pirquet test on 49 patients, private and hospital, and was surprised by the large percentage of positive reactions. He quoted extensively from the literature to sustain his contention that phlyctenulosis is a manifestation of a general tubercular infection.

In conclusion he said that the oculist should unite with the internist in the constitutional and local treatment of this condition, as the evidences, the clinical findings, the treatments all show that phlyctenulosis is a local manifestation of a general tubercular infection.

Dr. Peter shared in the opinion of the essayist that tuberculosis is a larger etiologic factor in phlyctenulosis than is now generally conceded. He divided phlyctenular disease into two groups: first, those cases in which tuberculosis is clearly demonstrable by clinical and laboratory methods: and secondly, a small group in whom tuberculosis cannot be clearly defined. In the latter group are included a limited number of cases in which tuberculosis apparently does not play a part. Included in this same group, however, are a number of cases in which, by more careful physical examination and the use of the subcutaneous injection of tuberculin, tuberculosis may be discovered.

Dr. Samuel D. Risley presented a paper upon the "Status of the Cataract Operation as Based upon our Understanding of its Pathology." After claiming that the operation for cataract must ever remain a capital operation in ophthalmic surgery, he called attention to its inherent difficulties as demonstrated in the numerous methods which had been devised by each succeeding generation of surgeons.

Dr. Risley pointed out that in his personal experience cataract was a relatively rare occurrence, even after fifty years of age, and that reasoning a priori it was therefore plausible to conclude that when opacity of the lens did occur, it must be due to exceptional conditions. There could be no

reasonable doubt as to the frequent association of cataract with diabetes, with certain forms of glaucoma, with albuminuric retinitis and the hemorrhagic retinitis of cardiovascular disease, but that the choroidal conditions associated with these diseases in their incipient stages could not be differentiated by ophthalmoscopic study alone. So far as diabetes might be regarded as a specific cause for cataract, his study had shown that two per cent or more of all patients with choroidal disease, after fifty years of age, revealed the intermittent presence of sugar in the urine, whether cataract were present or not, and no larger percentage of patients with cataract had glycosuria. The impaired nutrition of the eyeball dependent upon choroidal disease due either to local or systemic affections he believed to be responsible for the opacity of the lens, and in a considerable percentage of such cases not only did the lens undergo degeneration changes, but also the avascular vitreous body. While this clinical association was so obvious in the vast majority of cataracts, the explanation of how the nutritional change in the lens was accomplished was not clear, but suggested that the colloidal supply furnished by a pathological uveal tract might be so changed in its constitution that the imbibition by the lens or the penetration by these fluids through the lens capsule and supporting membranes would be changed, as in the well-known modification of osmosis through animal membranes produced by change in the density and character of the fluids in which it was immersed.

Dr. George W. Mackenzie, of Philadelphia, reading upon "Carcinoma of the Larynx, Operation by Thyrotomy, with Subsequent Hemilaryngectomy," gave the details of the removal of a nodular growth from the larynx, the size of a large soup bean, by thyrotomy, from a man forty-nine years of age. The growth recurring a year later, hemilaryngectomy was done. This consisted in the removal of the entire left half of the thyroid and cricoid cartilages, including the laryngeal contents of that side. In addition, a half-inch section running

vertically was removed from the thyroid cartilage of the right side, as a precautionary measure against recurrence from contact. There has been no evidence of recurrence, now seven months after the operation.

In the discussion Dr. O'Reilly dwelt upon continued hoarseness as an early symptom of carcinoma of the larynx. He thought laryngofissure the operation of choice in beginning cases, especially if intrinsic. He praised Marschek's method of anesthesia, preferring local anesthesia with a two-percent solution of novocaine always after ten years of age. Repeated injections of morphine and scopolamine are also administered as adjuvants.

Dr. C. M. Harris, of Johnstown, read a paper entitled "Hypopyon Ulcer of the Cornea and its Treatment." The causes and bacteriology were dwelt upon; the clinical characteristics of the ulcer and origin and nature of the hypopyon were discussed. In suitable cases the author advised liberal use of the electrocautery, supplemented with keratome incision of the cornea at some healthy inferior location. measures were to be used and repeated according to one's judgment. Heat, atropine, and dionin were to be used locally and alteratives given internally. Scarlet-red ointment was advised during healing to insure a firmer cicatrix. Stress was laid upon the value of using vigorous measures when indicated, and in not temporizing.

Dr. Corson, of Pottsville, said that he believed the prognosis of cases of ulcerated cornea in miners should be more grave than in others, and he attributed this to trophic changes resulting from malnutrition consequent upon working many hundreds of feet below the sea level.

Dr. George Morley Marshall, of Philadelphia, in his paper on "The Correction of Nasal Deformities, Particularly External Lateral Deflections and Depressions with Obstructing Deviations of the Septum," held that operation is indicated where the nose is unsightly, because of the mental depression it produces, and of the obstruction to nasal breathing. The essential features

of the operation are cutting through the nasal process of the superior maxillary bones, the incision being made parallel to the general alignment of the nose, at the point where the nasal prominence begins, and the securing of mobility without disarticulation, this being accomplished by a broad-bladed forceps, with which elevation is also made.

Elevation of the bones allows straightening of the septum. This is made more complete by use of the same forceps. If there remains an angle at the maxillary nasal frontal suture, it may be straightened by a sharp blow with a mallet directly from above downward. The septum is held in line where necessary with a splint for one or more days. Pressure is exerted for several days at the site of the previous deforming angle. If septal spurs or thickenings remain, the enlarged nasal space allows subsequent correction.

Dr. Corson, of Pottsville, begged for more careful correction of nasal deformities at the time of the injury, and thought the use of internal splints or tampons would avert much subsequent ear and throat trouble.

#### AORTIC REGURGITATION.

SEYMOUR TAYLOR in the Practitioner for August, 1912, reminds us that the treatment of aortic regurgitation involves many considerations, and many points must be kept in mind. It is not sufficient, the valve lesion having been detected by the stethoscope, that our treatment should be directed only to the valve and its muscular mechanism. The intelligent practitioner views the clinical picture as a whole, and from a distance, as it were. What are the conditions and tone of the patient's blood-vessels? Is the valve affection a part of the wreckage left by rheumatism, or by syphilis, or by gout? And so on.

Whatever be the cause, the first essential in an early case is complete rest in bed or on a couch. This is more important for the mending of an incompetent aortic valve than for (say) a fractured femur, or even for an aortic aneurism.

Notwithstanding a long period of complete rest after acute rheumatism, it should always be remembered that aortic incompetence may supervene some months after apparent recovery or discharge from hospital; and all the time we imagined that the valve was intact.

When aortic valve failure has become a fixed and incurable lesion, other problems arise. Two distinct classes of patients will present themselves for decision. Contrast the man of wealth and leisure with the one who has to work, and possibly labor hard, for his daily bread, and the support of his dependents. Taylor's experience shows that the former lives, on the average, twice as long as the latter.

The pregnant woman should have her parturition eased by instrumental assistance. In every case constipation must be avoided. Alcohol, except in the most diluted strength, should be forbidden. Certain symptoms which are common require palliative measures. These patients suffer from flatulence, both in stomach and in the Therefore fluids should be recolon. stricted; food should also be given in small quantities; a fast of one day a week is often of great advantage, as by this means we lessen the heart's toil. It is surely better to take some of the load off the struggling horse rather than to stimulate or goad it to extra exertion. Great relief may be afforded by the passage of a tube into the stomach; but this is a procedure which demands caution. Enemata or a long rectal tube will usually evacuate large quantities of gas from the colon and lower bowel.

Sleeplessness, or sleep disturbed by distressing dreams and nightmares, is often complained of. In Taylor's experience, opium or morphine need not necessarily be forbidden, even though the urine contain a small amount of albumin due to passive congestion. A patient once took by mistake four times the dose of morphine solution which had been allowed (20 minims instead of 5 minims), and the result was beneficial

rather than harmful, notwithstanding that he had slight albuminuria.

Chloral and its congeners are better avoided; they possess a distinctly depressive effect on the heart. Taylor prefers the administration of large doses of bromides, especially the bromides of ammonium, potassium, and sodium combined.

In those few simple cases in which there is not, and never has been, any inflammatory affection of the valve cusps, and in which the insufficiency has been brought about by dilatation of the ventricular cavity, we have not arrived at that ideal stage of cardiac treatment when we could massage a left ventricle; but we can, with some hope of success, afford compensation for this inability by such a method of treatment as is calculated to restore tone to an overtaxed muscular organ. This is effected by a judicious regulation of diet, by affording appropriate rest to the heart, and ultimately by prescribing tonics which act specially on the muscular system.

Bearing these points in mind, Taylor has found great advantage accrue to the patient by prescribing a dietary which shall consist of small meals, in which animal food predominates, the carbohydrates especially being cut down to a minimum. Strong tea, coffee, and any excess in the use of tobacco should be forbidden. The patient should, if his circumstances will allow, have a prolonged rest in bed, with periods of shorter rests from time to time; and even during these rests he should be shut off from all business worries, or mental anxieties which might be calculated to increase the frequency of his cardiac action. By these means not only is the laboring heart afforded the opportunity of self-recuperation, but flatulent indigestion is prevented; for we must remember that the stomach is only next-door neighbor to the heart, and when both organs are distended the distress is a double one, the cardiac being the more urgent.

As regards tonics, Taylor advises the use of such as would be employed after any debilitating illness. They include iron in small doses, with some bitter infusion, as quassia, or calumba, or more especially the tincture of nux vomica. This latter drug should be given by itself. Taylor prefers it to strychnine, since this is not the only, though the most powerful, alkaloid in nux vomica; and he finds that an ordinary dose of the tincture is more efficacious than is the equivalent or corresponding dose of liquor strychninæ.

But this class of case is comparatively rare. The majority of patients who suffer from aortic insufficiency are the victims of some form of toxemia—rheumatic, septicemic, syphilitic. Obviously, if any one of these diseases is present, we shall be assisting in the heart's recovery by prescribing salicylic acid or its compounds, or by ordering mercury, potassium iodide, or both, as the case may be. The treatment is constitutional for the most part.

But the problem resolves itself sooner or later into one of cardiodynamics. What can we best do for a laboring, dilated, and still dilating left ventricle? The blood stream which has been propelled from the left ventricle has no shelf of support, or only an imperfect one; this is no longer "locked" by competent gates, but remains in the locality of, even if it does not return to, a cavity which ought to be engaged in its next task. The result is seen in the physical signs of ventricular dilatation; we recognize it in the pallid face and the shaking carotids and in the panting dyspnea.

Digitalis immediately comes to one's mind as the one remedy. We are now on debatable ground. One eminent authority says "Yes," and speaks with scorn of another no less able authority who says "No." Many men have written in praise of the efficacy of this drug. For the most part these observers are, or have been, men of high position in our profession, with names that must command a respectful audience. But have they always been wise? Is there not also a possibility that those who disagree (and there are able men who disagree, or have disagreed) may be correct? The author has many cases in which digitalis appeared to have a disastrous effect in aortic regurgitation.

### EDITORIAL.

## THE HYPODERMIC USE OF REMEDIES IN ANEMIA.

We have recently called attention in the GAZETTE to the results obtained by Dr. J. H. Musser, Jr., in the treatment of anemia by the hypodermic administration of various soluble preparations of iron. It will be remembered also that about a year ago Bullock and Peters reported their use of hypodermic injections of the citrate of iron in the secondary anemias of tuberculosis, and that Barlow, Jarvis, and Cunningham have done likewise.

We think it a general rule that remedies that have to be administered over a long period of time should not be given hypodermically if it is possible to obtain satisfactory results when they are given by the mouth. Aside from the annovance to the patient, and the danger of infection which is inseparable from hypodermic medication, it is questionable whether the system will deal with iron which is placed beneath the skin as well as it will with iron which is placed in the alimentary canal. Reports, however, continue to be published concerning its use by the hypodermic needle, and the latest which has come to our attention is one by Lowenburg, in the American Journal of Diseases of Children for September, 1912. This author, of course, recognizes the need of good food, fresh air, and healthful environment in these cases, but he thinks that iron in children is absorbed very slowly from the intestine and that arsenic often produces gastric irritation and diarrhea or even irritates the kidneys. irritation of the kidneys is, however, more prone to occur if arsenic is given hypodermically than if it is taken by the mouth. Lowenburg seems to think that it is an advantage to put iron and arsenic into the circulation with great rapidity, and that by so doing something is done toward overcoming the effects of toxemia without disturbing the normal process of metabolism. He thinks, too, that a paper published, some three years ago, by Morse proves that this

view is correct, but we are not aware that there is any considerable evidence to support his contention that iron and arsenic, when given by the mouth or hypodermic needle, combat toxemia. The most they are supposed to do is to aid in the formation and maintenance of red blood cells, unless of course some parasitic disease is responsible for the anemia, in which case the arsenic has a specific influence upon the parasite and acts, as well, as a blood-making drug.

When one considers that the total quantity of iron in an adult body rarely exceeds 30 grains, and when it is also recalled that the production of red blood cells with their hemoglobin content is a complex rather than a simple process, it would seem probable that immediate effects upon the production of red corpuscles cannot be expected from the administration of any drug by any avenue of entrance. Without doubt when large doses of iron are given most of the remedy accumulates in the liver and some of it is eliminated, the body only utilizing the small amount which it needs, being at a loss, so to speak, how to deal with the excess which it has received. Then, too, in many cases of anemia the difficulty lies not so much in the fact that the food does not contain sufficient iron for the needs of the body, but that the vital processes by which the body utilizes iron are in disorder. Certainly, in some instances, the condition is akin to that which exists in rickets in many cases, namely, that the food contains enough bone-making material for the proper growth of the osseous system, but the child is unable to utilize the bone salts which it takes into its body.

Having had a considerable experience with the citrate of iron, Lowenburg believes that it is perhaps the best preparation for hypodermic use, but has found that some preparations of it prepared for hypodermic needles are decidedly irritating, while others do not possess this disadvantage. He advises the use of an ordinary hypoder-

mic syringe, preferably all glass, which, of course, should be carefully sterilized, and he believes that the injection should be given deeply, the needle being held at right angles to the point of injection and plunged for its full length into the tissues, preferably into the posterolateral inner aspect of the upper portion of the arm. This is followed by little or no pain unless a nerve filament is touched. Lowenburg's conclusions are in some respects identical with those which have been reached in the administration of iron and arsenic by the mouth, namely, that such a combination is more efficient than either drug alone; that small doses give as good results as large ones; and that the tonic effect begins almost immediately.

### SPINAL ANESTHESIA.

Although we have repeatedly, during a number of years, discussed this subject in the editorial columns of the GAZETTE, the production of spinal anesthesia for surgical purposes is so important and is so universally resorted to that we believe it appropriate to discuss it further and to keep our readers informed from time to time of noteworthy papers which appear concerning it. Our attitude has been that spinal anesthesia is to be resorted to in a very limited number of cases, and that it should be employed by one who has experience in its use. We think that we have clearly proved that the number of complications arising during, and after, anesthesia is greater than the number which ensue after the use of ether or chloroform, and it will be recalled that we have more than once pointed out that spinal anesthesia does not remove the psychic element which is always so important a factor in operative procedures.

In the issue of the British Medical Journal of August 17, 1912, Madden and Shaheen discuss this subject, basing their remarks upon a thousand cases. Although we have no information that spinal anesthesia is different in its effects in Egypt or in hot countries from what it is in Europe or America, it is not to be forgotten that the action of chloroform is very different in the tropics from what it is in the temperate zone, and it is conceivable that the experience of a thousand cases in Egypt should not be considered to be the equivalent of a thousand cases in a cooler climate. On the other hand, any contribution which gives us the results of so large an experience is certainly deserving of careful consideration.

The anesthetic employed in these cases was stovaine combined with strychnine and water according to the formula devised by Jonnesco, consisting of stovaine 1.10, strychnine 0.001, and water 1.0. Madden and Shaheen found, however, that the efficiency of this solution was greatly increased by the addition thereto of adrenalin, and they state that they had put up by Parke, Davis & Co. this solution in a form of ampoules, thereby obtaining the best results they ever had. When the ampoules were exhausted they attempted to make the same solution themselves, but found to their great surprise that many of their ampoules failed to produce anesthesia, and that when anesthesia was produced it was often unduly fleeting.

It is noteworthy both from the standpoint of disagreeable effects and from the standpoint of therapeutics that they make the additional statement that the best treatment for sudden faintness and collapse symptoms seen after a stovaine injection is a hypodermic injection of 5 to 10 minims of 1:1000 adrenalin chloride solution, and that if a further stimulant is needed, 5 minims of a one-per-cent solution of strychnine is advisable. They state that they have had no experience with Barker's stovaineglucose solution.

Their method has been to paint the entire back from the mid-dorsal spine to the sacrum with iodine, and to make the injection while the patient is sitting on the edge of the table with his head well down on the chest and the elbows resting on the inner sides of the thighs, whereby the back is strongly arched. The point of insertion is in any interspace below the last dorsal vertebra. They prefer the exact middle

line and use an ordinary exploring needle without a stilette. If, however, after twisting the needle around a flow of cerebrospinal fluid fails to escape, a stilette is introduced. Should these methods fail to produce a flow of fluid, they think it is better to remove the needle and insert it at a higher space rather than persist in attempting to find the right track. After the cerebrospinal fluid flows a syringe is attached to the needle and the mixture is then slowly injected. Some of the cerebrospinal fluid usually gains access to the barrel of the syringe and thereby dilutes the solution. After the injection the needle is slowly withdrawn and the patient is at once placed in a semirecumbent position, his head back and shoulders being well raised on pillows. Madden and Shaheen lay considerable emphasis on the importance of diluting the injecting fluid with cerebrospinal secretion, and even go to the extent of advising that if the cerebrospinal fluid does not flow into the syringe, when it is attached to the needle, the piston be withdrawn, after making part of the injection, in order to cause the cerebrospinal fluid to enter the syringe.

They claim that the amount of pain produced by the entrance of the needle is slight and that after the injection there is at once a sense of tingling in one or both legs, followed by a feeling of dead weight, and in a few minutes anesthesia develops. Rarely a sharp shooting pain runs down one leg rapidly. As the anesthesia is induced promptly the operative procedure may be begun as soon as the patient is put in the reclining position. As a rule the anesthesia lasts about an hour, and sometimes they have known it to last one hour and forty minutes. If the operation has not been concluded they think it best to continue the anesthesia with a little chloroform rather than to use a second injection. The anesthesia usually extends up to the costal margins, and they believe it is high enough to permit of operation on liver abscess if a rib not higher than the eighth is excised.

Madden and Shaheen are liberal enough,

however, in their favoring of spinal anesthesia, to admit that in cases of acute abdomen they believe scopolamine and chloroform to be the better anesthetics, and they further admit that in quite a fair proportion of cases there is shock, evidenced by pallor. faintness, nausea, and feeble pulse in varying degrees, after stovaine injection. Smaller quantities of stovaine are necessary in operations on the rectum or perineal regions than in those involving tissues higher Concerning the immediate symptoms which are induced, it is stated that some patients feel faint or giddy, become very pale, and have urgent nausea. If they vomit at once they become much better, but if they do not vomit their pallor increases, they have repeated retchings, and they may have all the usual symptoms of a mild collapse or even definite heart failure. Should these symptoms arise a dose of brandy is the most potent and rapid remedy, and the adrenalin injection to which we have referred, followed if necessary by strychnine, which is more dependable. Sometimes intravenous saline injections must be resorted to and continued until definite improvement takes place. If there is high anesthesia, "air hunger" may also be present. They state, too, that they have had two cases in private practice in which symptoms of complete heart failure came on immediately after the injection, and these patients were saved only by repeated injections of adrenalin, strychnine, caffeine, and sparteine, with artificial respiration. There were also a certain number of fatal cases in this series -one a boy of thirteen, who was operated on for extravasation of urine; another an adult, who had anemia, hookworm, and liver abscess. The third had a twisting of the kidney on the ureter. In all of these cases the death was a cardiac death, and in two of them the heart was found to be distinctly degenerated. Concerning the aftereffects, they find that pain in the legs is often complained of, and later headache These symptoms usually and backache. disappear in about two days.

The final conclusions of Madden and Shaheen are almost identical with those

which we have already expressed, namely. that the intraspinal use of stovaine is a valuable alternative to ether or chloroform in operations in certain cases, but is never destined to replace them. They admit that when the accidents of stovaine occur they are more alarming and dangerous, there is a dreadful feeling of helplessness on the part of the surgeon, and furthermore that these victims develop no warning sign, which usually can be recognized when chloroform or ether is used. They also state that just as much care must be exercised in the administration of the drug and in the management of the patient after the injection as when chloroform is employed, and finally they conclude their article with this pregnant paragraph: "If a somewhat pessimistic note has unconsciously crept into this report, we are, on the whole, content to leave it so, as a well-intentioned protest against the impression that stovaine is entirely devoid of all danger, and that at worst its only drawback is failure, partial or complete, to produce the requisite degree of anesthesia."

## THE ABSORPTION OF FOOD IN TYPHOID FEVER.

During the last fifteen years readers of the GAZETTE will remember that we have repeatedly called attention to the excellent results which follow the administration of plenty of food to patients who are suffering from typhoid fever. We have not only referred to reports of large series of cases which have done well under full feeding, but we have called attention to researches made with scientific accuracy upon the nutritional processes of this disease when the patient is placed upon a rigid milk diet or is given various kinds of easily digested and nutritious food.

The latest contribution to this subject, with which we are familiar, is made to the Archives of Internal Medicine of September 15, 1912, by Du Bois. He quotes a number of investigations in support of the view that typhoid patients have heretofore been unnecessarily limited as to their food, and

then proceeds to detail the so-called "calorie diet" which was administered in the cases which he studied. These patients received a quart of milk, nearly a pint of 20-per-cent cream, 3 to 6 ounces of lactose, two or three eggs, a couple of slices of toast and some butter, and thereby obtained between two and three thousand calories or heat units, double the amount which they received when upon a milk diet. He even suggests that much good may come from giving such patients boiled rice, oatmeal, mashed potato, cream of wheat, custard, or ice cream.

For a number of years the writer of this editorial has administered this very free diet with excellent results and can cordially indorse it. There are only three theoretical reasons which can be advanced against it: One, that the patient's digestive apparatus cannot prepare foodstuffs for assimilation while the febrile process is present; another, that there is danger of producing perforation or hemorrhage; and lastly, that the processes of metabolism and assimilation are so perverted that even if a food is predigested the body is unable to benefit by its No evidence has as vet administration. been advanced that these theories are correct. The objection that the digestive functions are impaired has little force because the digestion can be aided by artificial means. The ulcer cannot be perforated by well-softened predigested foods, nor can hemorrhage be produced by such foods, and as to assimilation it can be stated without fear of contradiction that almost invariably typhoid fever patients maintain their weight and are not emaciated at the end of their illness when full feeding is resorted to. The difference between a patient, at the end of the fourth week, who has been well fed and one who has been kept upon a milk diet is almost always one of great degree, and, because of the better nutrition of the well-fed patient, the complications of the later stages of typhoid fever and the sequelæ of that disease are correspondingly diminished.

Du Bois's investigations show that when carbohydrates are given up to 10 ounces a day, careful examination of the stools reveals only traces of them at the very most, and often a total absence, showing that the material has been digested and assimilated. So, too, an examination of the nitrogen of the feces never exceeded amounts which were within normal limits. The only point which is noteworthy seems to be that during the early part of the disease the patient failed to assimilate fat as well as during the third and in the fourth week. also found that the indican in the urine. which is indicative to some extent of the putrefaction of nitrogenous substances, while high in the early part of the disease decreases steadily as the patient's condition improves, and that it does not materially differ from the quantity found in the stools of normal individuals at any time. Du Bois therefore believes that typhoid fever patients throughout the disease can absorb carbohydrates and protein as well as normal ones, and that they can also absorb a large amount of fat, although the percentage is a little lower than normal.

## THE RELATIONSHIP OF MILK TO BONE AND JOINT TUBERCULOSIS.

The question as to how largely tuberculosis in children and adults is due to the entrance into the body of tubercle bacilli derived from the cow, and how largely it is due to the entrance of bacilli which come from human beings, has been one of warm debate for a number of years, and wide differences of opinion have existed between the highest authorities on the subject of tuberculosis. Some have gone so far as to insist that practically all cases of tuberculosis in children are due to tuberculous milk or tuberculous food of some kind. For this reason a research which has appeared in the Journal of Experimental Medicine of October 1, 1912, by Fraser, is of very great interest. By careful and accurate bacteriological methods he differentiated the human from the bovine tubercle bacillus, and thereby was enabled to determine in large degree what cases of bone and joint tuberculosis were due to one cause or the other. He has proved that, in Edinburgh at least, a large proportion of bone and joint tuberculosis in children is due to infection by the bovine bacillus, and that this bacillus enters the body by practically only one route -that is, by the stomach-and in one medium, namely, cow's milk. In the comparatively limited number of cases in which the human bacillus was found to be the cause of the trouble there was also found a definite history of pulmonary tuberculosis affecting some one else who lived in the house, and all the evidence went to prove that the infection had been a direct one from the patient to the child. This research as well as a number of others which have preceded it emphasizes the importance of careful supervision of milk which is ingested by adults and children. Indeed, it would seem evident that if milk from tuberculous cattle can be excluded from the diet of children the number of cases of bone and joint tuberculosis in this class of patients can be very greatly diminished, and if care is used as to direct infection from tuberculous adults these distressing maladies of childhood which destroy usefulness or life can be almost entirely set aside.

### NEOSALVARSAN.

This latest creation of Ehrlich's, evolved at the expense of a research the length and difficulty of which are suggested by its number. 914, is according to its discoverer and the clinical evidence now afforded by a very extended use, equally as potent as salvarsan, less toxic, and much more readily administered. In arsenic content 0.9 gramme neosalvarsan is equivalent to 0.6 salvarsan, and the dosage of the newer drug is based on this relation. It comes in small glass ampoules, is a coarsely granular powder, dissolves almost instantly in cool sterile water, and decomposes on exposure to air even more rapidly than does salvarsan, becoming toxic as the result of such chemical change. hence it should be administered as soon after solution as possible. Nor is this difficult, since the requirements of administration are sterile water, free from bodies of dead bacteria, this implying recent distillation according to the formula of the United States Pharmacopœia, a sterile container, a rubber tube, and a needle of somewhat sizable lumen and extremely sharp point suited for venoclysis. Neosalvarsan in 5-per-cent solution can be injected intramuscularly with less pain and reaction than can salvarsan. This in regard to the pain is particularly true if a solution of novocaine is driven into the seat of injection before the arsenical drug is employed. This intramuscular injection, however, is to be used only under certain exceptional circumstances.

The question naturally arises in the minds of practitioners as to whether Ehrlich's arsenical preparations have so firmly established their therapeutic efficiency as to require their routine use in the ordinary cases of syphilitic infection.

An affirmative answer can be given to this query, and one with very few qualifica-These arsenical preparations have shown themselves singularly devoid of danger, providing they are given in proper dosage and to cases neither exhibiting the cachexia of profound visceral degeneration nor signs of extensive cerebrospinal involvement. The hope of entirely overcoming a syphilitic infection by a single large dose of the drug is apparently fallacious. The fact that many cases are promptly and radically cured by a course of treatment followed by mercury is shown by the number of syphilitic reinfections which are now recorded in medical journals, this reinfection necessarily implying that the original disease must have been cured. Among the precautions to be observed in administering salvarsan and neosalvarsan, the latter representing distinctly the drug of choice, are due attention to the purity of the water used as a solvent and the promptness with which injection is made following solution. Moreover, it seems unwise to give these injections to patients suffering at the same time from infections other than syphilis-grippe, for instance. In view of the fact that occasionally anaphylactoid phenomena develop, or those of arsenic intoxication as an expression of idiosyncrasy, the patients to

whom these injections are given should be kept either under observation or within reach after each treatment. The large majority of patients to whom neosalvarsan is given experience no ill effects and feel prepared to go on with their usual routine of life. This, however, cannot always be counted upon.

Syphilitic infection seems curable by salvarsan in direct proportion to the timeliness with which the drug treatment is given. The diagnosis of chancre can be made by the finding of the spirochætæ. As soon as the examination is made the treatment should begin, preferably by an immediate and wide excision of the chancre, if this can be accomplished without resultant permanent deformity. Whether this excision be practiced or not the neosalvarsan injection should be made at once. The initial dose of 0.6 salvarsan or 0.9 neosalvarsan, repeated by 0.9 or 1.2, repeated again in three days with this larger dose, and followed by a month of mercurial treatment and one more dose of the arsenical preparation, is regarded as the most approved method of aborting the disease. Both in the case of the arsenic and the mercury the dosage should be such as to produce at most a transitory deterioration of the patient's health. He should feel as well if not better than before the beginning of his treatment, should relish his food, and be fit for his work. The toxic effects of either drug by lessening vital resistance lessen the chances of either a symptomatic or radical cure. The subsequent course of the disease may be known by the Wassermann reaction.

During the tertiary period of syphilis, if the symptoms of cerebrospinal involvement are present, as evidenced by headache, alterations of temperament, irritability, backache, etc., the salvarsan should be preceded by mercury, the arsenic preparation being followed at times in these cases by changes so intense as to resemble a hemorrhagic encephalitis. Ehrlich has pointed out that there is a distinct and most valuable emergency treatment in cases exhibiting anaphylactoid symptoms following injection. Such cases are always attended by low

blood and high intracerebral pressure. Lumbar puncture should be practiced, followed by enteroclysis or even venoclysis, and further by the administration of calcined magnesia and hypodermics of caffeine. For those cases of coma incident to acute yellow atrophy of the liver with profound renal degeneration there seems to be no special form of treatment, death necessarily resulting.

The ends to be desired most at the present time are a wider knowledge of the method by which neosalvarsan should be given, a single dose being of little help, and the adoption of a combined treatment of arsenic and mercury, a cheapening of the drug, and a simplification in its method of administration so that this can be done efficiently and painlessly by all those who treat syphilis.

#### TREATMENT OF SIMPLE FRACTURES.

While so much has been written concerning the operative treatment of fractures, its indications and its dangers, the surgeon who has practiced more conservative methods doubtless wonders as to whether he is doing his full duty by his patients in continuing these methods, this doubt being founded on the fact that of the thousands' of broken bones daily taken into hospitals and treated there the ultimate functional and cosmetic result is systematically recorded in but a very small percentage of cases. Hitzrot contributes a study of some end results (Cornell University Medical Bulletin, vol. i, No. 4), not without their useful lesson. While acknowledging that exceptionally the indications for operation are quite clear, Hitzrot is satisfied from a careful observation that the means at present employed, or modifications of them, in the great majority of cases procure absolutely satisfactory results, and moreover he points out that it not infrequently happens, when these results are unsatisfactory, that by no possibility could open treatment have made them any better. For instance, fractures of the lower end of the radius may be completely replaced, yet crushing of the spongy lower end may so shorten the radius that the level of the two styloids is distinctly altered; the lower end of the ulna becomes prominent, the wrist-joint wider, and some radial deviation of the hand self-evident; yet function may be perfect except for very slight limitation of ulnar deflection. The same may be said of fractures involving the upper end of the humerus, the slight resultant disability here being expressed in limitation of abduction and external rotation.

First Hitzrot insists that early reduction before infiltration has set in gives the best results. Of the many methods of extension, those advocated by Bardenheuer, the Hodgins splint and vertical suspension. were the most used. The reduction was nearly always made under ether, though there were minor cases in which gas and oxvgen were used. In fractures of the thigh reduction is accomplished under ether, adhesive plaster being applied to the lower leg up to and above the knee as in Buck's extension. In the lower end of this plaster is fastened a strong loop (three thicknesses of muslin), and this is put over the shoulders of an assistant, who, bracing his feet, leans backward, using the weight of his body for traction. A sheet folded lengthwise is passed under the patient and over the perineum and up over the body in the long axis of the body, and countertraction is made by the pull of a second assistant, who, holding both ends or passing the sheet around his body, braces his feet and leans back, using the weight of his body for counter-traction. This insures a steady pull without fatigue or the necessity of obtaining a fresh grip.

Of the many forms of retention apparatus, molded plaster splints, made according to the method given by Stimson, have proven the most satisfactory. They have been used to the exclusion of all other forms of splint because of their strength, lightness, ease of removal and replacement.

Massage is begun as soon as the callus is solid enough to prevent displacement and as soon as pain on handling has disappeared. Baking is indicated as early as the beginning of the second week. In general the earlier active and passive motion is allowed, the better the result. Obviously no weight should be borne by bone not yet solid without external support. X-ray treatment is not considered of particular importance for diagnosis of fracture, though as a means of determining the accuracy of setting it is of great value.

Twenty-seven cases of fractured clavicle were reduced by placing the patient on the back with a sand-bag between the shoulderblades and a sand-bag under the sacrum. In this position the ordinary Sayre dressing was applied and so adjusted after the patient assumed the erect position that it kept the fragments as nearly as possible in the good position obtained. After appropriate axillary and skin padding, a Velpeau bandage was applied and the above dressing kept on the patient for three weeks. Massage was then begun and the arm carried in a sling for one week longer. All cases showed slight deformity at the site of the fracture; this was most marked in men, but with no disturbance of function.

Of 141 cases of fracture of the surgical neck of the humerus, most of them in men. 67 were more or less impacted, with penetration of the lower fragment into the upper and crushing of the upper fragment. The non-impacted cases exhibited the usual axillary displacement of the lower frag-Treatment was by modified Stromeyer cushion placed in the axilla for abduction, and adhesive strips applied from the level of the deltoid insertion to the elbow, with the ends extending below the level of the elbow. To these ends a weight of from five to ten pounds was attached and allowed to hang for one hour. If reduction was then satisfactory, molded plaster splints were applied. (The posterior splint should begin at the base of the neck and pass down the arm to the wrist on its posterior surface, leaving the latter joint free. The anterior splint should begin at the vertebral column about the level of the superior angle of the posterior border of the scapula, pass forward across the shoulder-cap of the posterior splint and down the arm to the wrist.) The weight and cushion should be kept in place during the application of the splints, and the width of the cushion should be sufficient to bring the bone in proper alignment. If the x-ray picture then taken showed imperfect reduction, the arm was bound to the chest and traction continued over night and the splints applied on the following day. One irreducible case, aged nine, was operated upon. Massage in ten days, the splints removed in three weeks, passive motion on subsidence of swelling, and active motion when the splints were removed, and the free use of the arm at the end of the fifth week. Two children, one an operative case, had perfect results with no limitation of motion. Of the remaining 139 cases hyperabduction was but slightly limited except in two. In one (impaction) the arm could only be abducted about 10 degrees beyond the hori-In the second case (impaction) hyperabduction was possible to half the distance of that on the normal side.

There were four cases of fracture of the neck of the humerus with dislocation of the head. The first case, a Christian scientist, exhibited an absolutely stiff shoulder and a weak atrophied arm and forearm sixteen months later, but was satisfied. The second patient had the head removed through an anterior incision nine days after injury. The movements of the shoulder were limited, and she could just get her hand to the top of the occiput. The third patient had the head removed sixteen days after the injury. Six months after operation the patient reached the posterior collar button with ease. The fourth patient, subjected to excision nine months after the operation, could abduct to the right angle.

Seventeen cases of fracture of the shaft of the humerus, all of them in men, and situated between the deltoid insertion and the supracondylar ridge, were treated by a modified Stromeyer axillary pad, extension by plaster and weights, and molded plaster splints. The functional and cosmetic results were entirely satisfactory.

Of fractures of the lower end of the humerus there were 106 in children from one

to ten years of age, and 34 in adults. Fiftytwo of the children had fracture of the external condyle: 54 supracondylar. fractures of the external condyle were treated by hyperflexion with a molded posterior splint or adhesive plaster and bandage for two weeks, when all fixation apparatus was removed and massage begun. All had perfect return of function with no appreciable deformity. Fifty-four cases of supracondylar fracture in children were reduced under anesthesia, and molded plaster splints applied with the arm flexed to a right angle or slightly beyond it. Gunstock deformity was prevented by a molded posterior splint from the shoulder to the wrist with a Ushaped splint about the elbow, with that arm of the U over the inner side of the forearm placed a little more upward than the posterior limb of the splint.

Function at the elbow-joint was perfect in all cases. In only four was there a diminution of the carrying angle.

The condylar, intercondylar and Y fractures of the adult resulted in limitation of motion and some thickening. All the patients were, however, able to do manual labor.

Eleven cases in men are characterized as extension fractures of the lower end of the humeral shaft. The line of fracture began just above the level of the epicondyles and ran upward and backward obliquely to varying levels. Seven were reduced under an anesthetic, and the same molded splints were applied as in fracture of the surgical neck of the humerus, with flexion of the forearm to or just a trifle beyond a right angle. In no instance was perfect end-toend alignment attained. There was solid union in all but one case by the end of the sixth week. This united at the end of the ninth week. The results were functionally and cosmetically perfect.

In fracture of the head of the radius the arm was held in flexion midway between pronation and supination, and both the latter movements were impossible. In the 15 cases without displacement the arm was supported by a posterior splint, baking begun on or before the third day, and massage

before the second baking—i.e., on the fifth day—and movements in flexion and extension as soon as the swelling subsided, usually about the tenth day. Pronation and supination were begun about the fifteenth day. Flexion and extension were complete in all cases; in two cases pronation and supination were so slightly altered as to be classed as perfect; in 11 cases pronation and supination were limited one-half.

Of the four cases with displacement of fragments, in two the head was broken into three fragments, two of which were displaced anteriorly, while one fragment remained in position. In this type the entire head was removed by cutting through the neck about half an inch below the articular surface. In the remaining two cases the head was broken in one place only, and the fragment was displaced outward and forward; and in this type the fragment only was removed.

The resultant motion was bettered in that case in which the most bone was removed —i.e., the bone cut through at the lowest possible level. In two cases of partial removal of the head, supination was one-half normal, pronation two-thirds normal, and pain was present during either movement in one of the cases for nearly a year.

Of 10 cases of fracture of the neck of the radius, transverse in type and involving that portion of the shaft about one-half inch below the head, the arm was treated in midposition between pronation and supination with a U-shaped plaster splint, which was left on for from three to five weeks. Two cases made an almost complete recovery; in the other eight pronation was two-thirds normal and supination five-eighths normal.

As to fracture of the olecranon, 26 cases were treated in the extended position and 21 cases more or less displaced were operated upon. The results were regarded as functionally perfect in 40 cases. In six cases, four operative and two non-operative, there was a perceptible loss in flexion, and in one of the non-operative cases this loss of flexion was 10 degrees. Two cases which were operated upon show separation of the fragments, one four months and the other

six years after operation—i.e., fibrous union. There was no movement between the fragments, and function was perfect in both cases.

Fracture of the shaft of the radius and ulna occurred in the majority of cases in children from one to fifteen years of age; thereafter in adults from seventeen to forty-seven years. There were 58 cases of complete fracture of both bones; the line of fracture was transverse in 50 cases and oblique in eight. The middle third of the bones was the region most frequently involved, and the radius was fractured at a slightly higher level than the ulna in all but four of the cases.

The method of reduction under ether is the correction of the angulation in the subperiosteal type; in the other types approximation of the ulnar fragments, then traction in ulnar abduction. This traction should be made by two assistants, so that the surgeon can manipulate the radial fragments into proper alignment. When the necessary approximation is obtained the arm is straightened, the traction being maintained, and the U-shaped molded plaster splint applied, with the arm in the mid-position. The fingers must always be left free.

In transverse fractures one attempt to bring the radius in approximate apposition sufficed in all but one case. In the oblique variety four separate attempts were needed in two cases. The one unsuccessful reduction in the transverse type was ten days old when first observed and could not be reduced. Non-union at the end of eight weeks forced the patient to consent to open operation. In 33 subperiosteal fractures function was perfect in all cases.

In the cases of complete fracture, function was perfect in all but two cases. In these supination was five-eighths normal and pronation almost complete. Complete perfect end-to-end apposition of the fragment was not obtained in any of the cases.

Fourteen cases of fracture of the scaphoid were treated—seven uncomplicated cases by a molded anterior splint with the hand in slight radial deflection and extension, and the fingers left free. Hyperextension was limited in all cases.

In three cases of displacement the proximal fragment was removed. Extension and flexion were both limited, as was ulnar flexion.

In three cases complicated by dislocation of the semilunar, the latter bone and the displaced scaphoid fragment were removed. The result was fair in two, functionally perfect in one.

Two cases of femoral fracture immediately below the trochanters with two inches of shortening were treated by suspension, traction, and abduction in a Hodgins splint for five weeks; then by a plaster spica for five weeks longer; thereafter by a long side splint of molded plaster. Weight-bearing was not permitted until the fifteenth week, and full use of the leg as soon as the patient gained confidence enough to walk without support. At the end of six months there was perfect function in both cases with 1/4-inch shortening.

Eleven fractures of the middle third of the femur in children from one to eight years of age were reduced by traction and manipulation under ether, after which the leg was straightened and a plaster spica applied, care being taken to have the anterior superior spine, the mid-patella, and the middle of the ankle in the same alignment as on the normal side. Nine cases were treated by vertical suspension of both legs, reduction under ether not being attempted. After ten days the extension was removed and a plaster spica applied.

Six cases showed shortening of 1/2 to 3/2 inch. Solid union and perfect function were accomplished in all.

Twenty cases of fracture of the middle third in adults, with shortening of the leg from 1 to 4 inches, treated by extension in a variety of positions, followed in a number of instances by a plaster spica kept on for from four to six weeks, showed shortening of from 1/8 to 1/8 of an inch, with the exception of two cases, and perfect function with the exception of one case. Of four cases operated on, one perished. In the others the result was perfect.

Eighty-five cases of fracture of the tibia and fibula were treated by immediate reduction under ether, and the application of molded plaster splints, including the foot, ankle, and knee—first a posterior one, and then a long U-shaped splint on each side. leaving the tibial crest free for determining any change in the line of the crest.

Except for delayed union in two cases. and in some instances a slight lateral angulation at the seat of fracture and some slight shortening, the cosmetic result was excellent, and the functional one perfect. patients past forty union did not usually become solid until from six to fourteen weeks. Of 64 Pott's fractures traced after one year from the time of injury in the young and middle-aged the function is practically perfect. In those past fifty-five (14 in all) function is perfect in but four. Five have practically a stiff joint, and the remainder have motion enough to walk satisfactorily on the level, but have difficulty on any incline or on steps.

This article is quoted at length because itrepresents a careful individual study of end results in the treatment of fracture, such as

is, unfortunately, rare in medical literature. It shows that under skilful treatment the vast majority of the common fractures can be safely and surely cured by conservative methods, with restoration of almost complete function. By contrast it demonstrates that to obtain these admirable results it is essential that hospital surgeons should themselves take an active interest in their fracture cases and follow them carefully with measurements and x-rays. It emphasizes the need of skill and experience in dealing with these cases, and though this is not put forth in so many words it can be inferred that these results, or indeed any which can be distantly compared to them, are unobtainable when fracture cases are consigned to the untrained hospital resident. The author frankly admits that there are certain cases in which satisfactory results can be obtained only by operation, but his paper clearly proves that these are the exception and not the rule. Moreover, it is noticeable that in the cases treated by the open method there is an effort made to avoid leaving in the wound unabsorbable foreign matter.

### REPORTS ON THERAPEUTIC PROGRESS.

#### THE ACTION OF PITUITRIN ON UTE-RUS CONTRACTION IN CHILD-BIRTH.

M. Malinowsky in the Zentralblatt für Gynäkologie, No. 43, 1912, states that as a tonic for the non-striated muscular system the extract of hypophysis seems to be irreplaceable. The pituitrin promotes intestinal peristalsis (Bell, Franchini, Hick), excites motor activity of the bladder, and aids evacuation of that organ (Frankl-Hochwart and Fröhlich, Schaeffer and Herring, and others).

This remedy seems to possess a happy combination of therapeutic qualities—uterovasculo-heart tonic. In its action on the heart and on the circulation it resembles adrenalin (Oliver, Schaeffer, Pal Fodera, de Bonis, and Tusanna), and, indeed, in some respects it has certain advantages over

the latter. The peripheral vascular contraction caused by pituitrin leads to a much more constant, though not quite so intense, increase in blood-pressure, which frequently lasts a half-hour or more. Besides which pituitrin has an immediate stimulating effect on the heart, reducing the rapidity of the heart action and strengthening it (Oliver and Schaeffer, de Cyon, de Bonis, Falta, Carraro, Herring, and others). Unlike adrenalin, pituitrin causes no renal contraction; on the contrary, in a case of incipient, temporary contraction it produces a distention, thus increasing diuresis.

This new preparation plays an important part in obstetrics.

W. Blair, of England (1909), and Foges and Hofstätter in Germany (1910), were the first to obtain favorable results from the use of pituitrin in postpartum hemorrhages. A short time afterward Hofbauer made the first attempt to use the drug in exciting and strengthening labor pains, and numerous reports of the good results attending the use of pituitrin soon followed. Hitherto no absolutely certain ecbolic was known to the obstetrician, and pituitrin seems to fill the want. It has been demonstrated that this new preparation promptly and infallibly excites and strengthens labor in three to five minutes, the process retaining its absolutely normal physiological character. Furthermore, it produces no disturbance in the later stages of childbirth nor during the childbed period. It is, therefore, not remarkable that pituitrin has come to occupy a secure place in obstetrics. Keher at a Gynecological Congress pronounced pituitrin to be the best medium for exciting and strengthening labor.

It is not feasible in the compass of this brief article to refer to all the works on the subject, which now number about sixty, while the clinical reports run up into the thousands, but I wish to dwell particularly on two recent publications—those of Fühner and von Hahl.

Particular interest attaches to Fühner's work, inasmuch as he was the first to make a close study of the chemical properties of pituitrin. Certain peculiarities in its behavior in regard to blood-pressure and respiration suggested to him a connection between pituitrin and B-imidazolylethylamin (histamin), a chemical substance possessing certain qualities in common with pituitrin, and in calling attention to the ecbolic action of the two preparations he recommends a trial of histamin in obstetrical clinics.

Special mention is made of von Hahl's publication, because it represents the only attempt to supplement the usual clinical observations with a more systematic and exact method of investigation. He induced labor by the administration of pituitrin in 42 cases. In four cases he used a Westermark and Wasenius tokodynamometer. He arrives at the following conclusions:

In this preparation we possess a valuable, though not infallible, agent for inducing powerful contractions of the uterus within a few minutes, which, provided the dose be not too strong, are perfectly normal (not tetanus) contractions. After an injection of pituitrin, the labor pains, though decidedly more acute, are of shorter duration, the intermissions likewise are shorter, with a slight increase in intrauterine pressure.

Numerous favorable clinical reports with regard to pituitrin, on the one hand, and an almost total lack of exact systematic experiments on the other, led Dr. W. S. Grusdew to commission the author to undertake a series of careful observations in the Obstetrical Department of the University Clinic at Kazan, in order to test the value of this agent as an obstetrical aid.

A modified form of a Schatz tokodynamometer was used in the 50 cases noted. The instrument differed from the original apparatus in possessing only one Hg manometer and in being in a vacuum. Parke, Davis & Co.'s preparation was used and the injections were always given subcutaneously.

#### RESULTS.

- 1. In proper doses pituitrin has a prompt ecbolic action.
- 2. During labor, intrauterine pressure is considerably increased, the difference in pressure before and after an injection being 29.5 mm. Hg. The duration of pains is decidedly curtailed (on an average to one-half minute).
- 3. The periods of intermission are reduced more than one minute. Intrauterine pressure is increased, though not much, during the intermissions.
- 4. In the majority of cases pituitrin labor retains its normal physiological character and exhibits normal rhythm—i.e., stadium incrementi, acmes, and decrementi being distinctly discernible (see curves 1 and 2). The "Sturmwehen" tetanus contractions, mentioned by nearly all authors, may be observed in nearly all cases in which pituitrin is used, and are more or less pronounced according to the doses (see curve 3).
- 5. The average length of time for these tetanus contractions is eleven minutes, and

these labor pains seem to have no unpleasant consequences for either mother or child.

- 6. Pituitrin seems to act most favorably in the first and the third stage of parturition, and is apparently without danger to mother or child during these stages.
- 7. In the early stages of the first period, during the dilatation of the os uteri and in "stehender Blase" in the primipara, and in

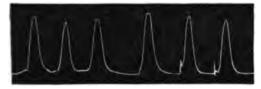


Fig. 1.—Physiological labor pains, intensified by means of one dose of 1 Cc. of pituitrin. Rotation-speed of the registering drum: 1 cm. = 57 sec.



Fig. 2.—Physiological uterine function during the second stage of labor, intensified by means of 0.6 Cc. of pituitrin. Rotation-speed of registering drum; 1 cm. = 24 sec.



Fig. 2.—Precipitate labor pains caused by one dose of 1.2 Cc. of pituitrin. Rotation-speed of the registering drum: 0.9 cm. = 1 min.



Fig. 4.—Tetanus uteri caused by one does of 0.9 Co. of pituitrin. Rotation-speed of registering drum; 1 cm. = 1 min. 16 sec.

cases of rigidity of the os uteri in multiparæ, pituitrin was capable of producing a true tetany which lasted on an average seven minutes (see curve 4). During the further progress of the act of birth, the uterus contractions resumed their normal physiological character and rhythm. In the primipara the rupture of the fetal membrane was not observed, although all other conditions favored uterine tetanus. The heart sounds of the child during these contractions were reduced from 60 to 50 beats per minute and were repeated during the progress of the birth. The child is always born lively and shows no asphyxiation.

- 8. One dose of 1 Cc. of pituitrin was entirely adequate. A half dose, as well as repeated smaller doses, exhibited a weaker reaction. The maximum single dose which still gave good results was 1.3 Cc.
- 9. Repeated doses are always effective. The second dose, if administered while the first one is still active, or afterward, always calls forth a new impulse.
- 10. The action of pituitrin begins in three to seven minutes after an injection. The point of injection is immaterial, whether it be the forearm, thigh, or abdomen.
- 11. Duration of action of one dose (1 Cc.) is about one hour.
- 12. The third stage of labor as well as the days following proceeded without complication. The placenta was always spontaneously expelled.
- 13. Pituitrin seems to be contraindicated in heart and kidney diseases.
- 14. The injections are entirely painless. In conclusion, I wish to emphasize the fact that in the first stage and in the presence or in the expectation of rigidity of the os uteri, pituitrin must be most cautiously administered. Numerous cases in literature of dangerous conditions confirm our own observations in this respect.

## INSUFFICIENCY OF THE SUPRARENAL SECRETION IN TYPHOID FEVER.

SERGENT, in the Journal de Médecin et Chirurgie Pratiques of October 25, 1912, contributes quite a long article on this subject. He believes that the prognosis depends much upon the early application of the only rational treatment in typhoid fever—suprarenal opotherapy. Except in very mild cases, it is necessary to bear in mind the possibility of a more or less accentuated suprarenal insufficiency, which explains why suprarenal treatment should always be applied in typhoid fever. Furthermore, this procedure acts as a guard against car-

diovascular asthenia, which always accompanies all severe toxic infections, even those that are not due to suprarenal lesions, while in the latter instances it acts as a preventive, inasmuch as it suppresses the symptoms at their very first appearance.

In agreement with Netter, Rolleston, and many others, he systematically administers adrenalin to all his typhoid patients, except in cases of intestinal hemorrhage, and his statistics are very favorable. While organotherapy cannot pretend to overcome all complications resulting from the development of intestinal lesions (hemorrhage, perforation), it must be admitted that it protects the patient against general toxic infection, and that it aids the more or less weakened suprarenal functions. always been able to note a very appreciable increase in diuresis-a decided advantage in the treatment of typhoid. It is likewise certain that in a number of instances, those in which the onset of the disease is severe. and which do not yield to cold baths, a decided amelioration in the condition of the patient is noticeable from the moment of the administration of adrenalin—the thermometric curves are more equal and the pulse rises with surprising promptness.

The adult dose is 1 mgr. to 1½ mgr., four times daily (within twenty-four hours) for eight or ten days, separated by an intermission of three or four days.

In the presence of predominant symptoms of asthenia, he prescribes a daily dose of 0.30 to 0.90 of the extract (extrait totale) for eight or ten days, and also with an intermission of three or four days.

It is important to make a daily note of the arterial tension, for on these figures we must frequently base our judgment in augmenting or decreasing the dose, the duration of the treatment, and the frequency of the period of intermission. It must be remarked, however, that the action of the extract (extrait totale) is not always apparent on the tension because its adrenalin content is not always constant. For this reason he reserves adrenalin for cases of hypotension and the extract (extrait totale) for cases of asthenia.

In the presence of acute peritoneal symptoms, when vomiting prevents the ingestion of adrenalin, the adrenalin serum must be resorted to, as recommended by Josué—one dose daily of 1 mgr. of adrenalin for one liter of serum in two injections.

This treatment, accompanied by the usual procedures, particularly cold baths, will effect most encouraging results.

We are, of course, powerless in the presence of hypertoxic and hemorrhagic conditions, against which all treatment is unavailing—conditions with which we all have had sad experiences.

## THE INFLUENCE OF CARBONATED BRINE (NAUHEIM) BATHS ON BLOOD-PRESSURE.

SWAN, in the Archives of Internal Medicine of August 15, 1912, reaches these conclusions:

- 1. Carbonated brine baths have no constant effect on the blood-pressure of the human subject.
- 2. In the cases in which observations were made both before and after each bath the systolic pressure was raised more frequently than it was lowered; so that we may say that the tendency of the baths is to raise the blood-pressure.
- 3. Although there are cases of high bloodpressure in which a course of carbonated brine baths has been followed by a lower systolic pressure, there are other cases of high pressure in which the pressure has been higher at the end of the course of treatment than it was at the beginning; in one case 26 mm. higher.
- 4. Although there are cases of low blood-pressure in which a course of carbonated brine baths has been followed by a higher systolic pressure, there are other cases of low pressure in which the pressure has been lower at the end of the course of treatment than it was at the beginning; in one case 20 mm. lower.
- 5. There is no method of determining in advance whether a given treatment will be followed by an elevation or by a fall of pressure.
  - 6. In the eighty-one cases the systolic

pressure was higher at the end of the course of treatment than at the beginning in thirtynine, lower in thirty-four, and unchanged in eight.

- 7. In cases of fibroid myocarditis the pressure effect is inconstant. In this series of cases the systolic pressure was lowered more often than it was raised; but the pulse-pressure was raised more often than it was lowered. It seems to the author a dangerous procedure to use a form of treatment in a case of cardiac fibrosis which may be followed by an increase of systolic pressure of 22 mm., or an increase of pulse-pressure of 32 mm.
- 8. In cases of parenchymatous myocarditis the effect of the baths on blood-pressure is usually to raise it; but in some cases the baths are followed by a reduction of both the systolic pressure and the pulse-pressure.
- 9. In cases of dilatation of the heart, cases of hypertrophy and dilatation of the heart, cases of mitral regurgitation, cases of hypertrophy of the heart, cases of tachycardia, and cases of aortic regurgitation, the same uncertainty of results was seen, except that in cases of mitral regurgitation the pulse-pressure was reduced in every one of the five cases; and in cases of aortic regurgitation the diastolic pressure and the mean pressure were reduced in every one of three cases.
- 10: In a case of arteriosclerosis an increase of 17 mm. in the systolic pressure and 23 mm. in pulse-pressure might result disastrously. In a case of chronic parenchymatous nephritis an increase of 9 mm. in systolic pressure and of 22 mm. in pulse-pressure may or may not be negligible. In a case of interstitial nephritis an increase of 50 mm. in systolic pressure could hardly be thought desirable.
- 11. The reduction of systolic pressure in a case of weak heart can scarcely be looked on as a favorable circumstance.
- 12. The benefit in the subjective symptoms in cases of heart disease which follows a course of carbonated brine baths is not dependent on the influence of the treatment on the blood-pressure.

# THE DIAGNOSTIC VALUE OF THE CUTANEOUS TUBERCULIN TEST OF v. PIROUET.

In the American Journal of Diseases of Children for July, 1912, WACHENHEIM states that the conclusions to be derived from his data are as follows:

If 95 per cent of all more or less rundown children give a negative reaction, a positive reaction in the small remainder becomes highly significant. Even an older child that responds to the cutaneous test should be regarded seriously, and by no means as one of the common run; an energetic antituberculous prophylaxis should be promptly initiated, and the patient should be guarded, so far as possible with our somewhat limited resources, against the recrudescence of a disease which it is safest to regard at the best as latent, and by no means extinct.

Our acquaintance with the v. Pirquet test is too brief to inform us as to the relative frequency of active tuberculosis after adolescence, in individuals who seemed fairly healthy, but reacted positively to the cutaneous test in childhood. The positive determination of the tuberculo-anaphylactic state is therefore of the greatest diagnostic value, and should make our remote prognosis extremely guarded.

## COD-LIVER OIL AND ITS ACTION IN PHTHISIS.

The Lancet of August 3, 1912, states that after referring to earlier work in which he had shown the markedly beneficial effects of cod-liver oil on fat absorption and nitrogen absorption, Williams mentioned some further cases in which cod-liver oil undoubtedly increased nitrogen retention also. His experiments in conjunction with Drs. Maclean and Forsyth had shown that cod-liver oil had a definite action on the metabolism of phthisis. In cases under observation the increase in fat absorption and in nitrogen absorption at once diminished when the oil was stopped for a period. The evidence went to show that cod-liver oil had some influence upon the fatty envelope of the tubercle bacillus, but he was unable to say whether this lessened the infectivity of the

organism. With reference to predisposition to phthisis in the case of diabetics, Williams said he had found a relative increase of saturated fatty acids in the blood in this condition, and in this matter he mentioned experiments which Mildred Powell and himself had conducted, which tended to show that the unsaturated fatty acids had an inhibitory effect on the growth of the tubercle bacillus.

Williams next referred to the high regard in which cod-liver oil was held by earlier writers, and compared the earlier statistics of Williams (1868) with Bardswell's more recent statistics. He had come to the conclusion that in spite of the discovery of the tubercle bacillus and the beneficent effects of recent discoveries, there had been no striking advance in the treatment of the disease.

Williams next gave the results of an examination of the various cod-liver oils on the market. Facts were given to support the contention that the activity of the oil did not depend upon the presence of iodine or phosphorus. Indeed, a consideration of the methods of preparation of the oils examined had led him to believe-in confirmation of Carles's work—that the presence of small quantities of iodine, phosphorus, and various other bodies in cod-liver oil was due to decomposition. From observation and experiment Williams concluded that the therapeutic effect of the oil was largely due to the amount of unsaturated fatty acids it contained and not to the impurities referred

# ACTION OF PHENOLPHTHALEIN, SCAMMONIUM, AND OTHER PURGATIVE SUBSTANCES.

A radiological study of the action of certain purgative substances on the intestines has been undertaken by Lebon and Aubourg. In a communication to the Société de Radiologie Médicale de Paris (Bull. et mem., No. 31, 1912) they state that phenolphthalein undoubtedly has a direct influence upon the muscular fibers of the large intestine. A rapid and abundant purgative action was noted after the feeble

dose of 0.40 cg. in a liter of bismuth water, given as a lavement. The action of phenolphthalein in minute doses was, indeed, precisely like that of scammonium and ialap taken in small quantities. It was concentrated almost entirely upon the intestinal musculature, and although it was possible with higher doses the glandular secretion might be altered, the authors had not been able to demonstrate it with the doses they had employed. The intestinal picture when phenolphthalein had been given closely resembled that obtained after the injection of a cachet enclosing 0.30 gramme of scammonium powder. The same contraction of the small intestine was visible, and there was the same dispersion of the intestinal contents. With 1/2 gramme of scammonium powder the contractions became feeble in the initial part of the ileum, and almost nonexistent at the terminal part. The intestine appeared also to enclose a larger quantity of fluid than that which had been introduced, and this was again evident when the dose was raised to 1 gramme. Such a high dose rarely gave any appreciable contraction of the small intestine. The contractions under such circumstances were much the same as those observed when the intestine was filled with a simple bismuth meal.

This decline in the purgative action with the increase of the dose was to be explained by the fact that scammonium only became purgative in the presence of the alkaline fluids of the intestine. Administered in large quantities, it did not find sufficient flyid to enable it to fulfil its function, but in small doses, as the radiological examination proved, the peristaltic contractions were excited without any noteworthy hypersecretion of the pancreas, liver, or intestinal glands. The powder of jalap, to the dose of 1 gramme, certainly increased the liquid contents of the intestine, while augmenting the intensity of the peristaltic movements to a much smaller degree than was generally imagined. Radiology, therefore, demonstrated that scammonium and jalap, generally classified as drastic and nervomuscular, were also hydragogue purgatives.

The authors were unable to say whether the hypercrinia of the intestine was simple or catarrhal. The absorption of a bismuth meal (250 Cc. of pure water and 100 grammes of bismuth) in which 30 grammes of sodium sulphate had been dissolved rapidly brought about a disproportionate increase in the fluid without acting on the contractions. — British Medical Journal, July 20, 1912.

## THE RELATION OF IRON TO ANEMIA IN INFANCY AND CHILDHOOD.

ASHBY has this to say in the Lancet for July 20, 1912, as to the absorption of iron:

The body gets the iron necessary for its needs through the food; the different foods, however, vary a good deal in the amount of iron which they contain. Thus, comparing the amount of iron in different foods: beef, 0.02; wheat, 0.026; potato, 0.042; peas, 0.024; yolk of eggs, 0.04; milk, human and cow, 0.003 per 100 parts of dried substance. The course of the iron through the tissues can be traced by histological examination of the stained organs. The test stains for iron in the tissues are ammonium sulphide, potassium ferrocyanide with hydrochloric acid, which gives the Prussian blue reaction. and hematoxylin. These stains all color the iron and not the hemoglobin.

Almost the entire amount of iron given in various forms by the mouth appears in the feces, and but very little in the urine, even though large quantities of iron are given in the food. In pathological conditions it is said that more iron is eliminated in the urine. Bedder and Schmidt, by experimenting on fasting men and animals, have shown that only 1.4 to 1.7 mg. of iron were excreted in the urine, while six to ten times the amount was excreted in the feces every day. Although iron plays such an important part in the body, there is only a very small quantity in the body altogetherviz.,  $2\frac{1}{2}$  to  $3\frac{1}{2}$  grammes (40 to 55 grains). In the alimentary canal iron undergoes certain changes. The inorganic salts are largely turned into ferric chloride in the stomach, but soon a large part of the iron enters into an organic combination with the protein and forms iron albuminate.

If iron be given to an animal, which is subsequently killed, and if the various organs are then stained for iron, the mucous membrane of the stomach and of the greater part of the small intestine shows no coloration, but the epithelium of the duodenum and the upper part of the jejunum is found to contain numerous granules of iron. The granules may be traced to the mesenteric lymph glands, also around the corpuscles of the spleen, and to a less extent in the liver. If the animal is kept for some days after giving the iron, the reaction in the duodenum, spleen, and mesenteric glands is less intense, while the liver gives much more evidence of containing iron. Thus, if a litter of guinea-pigs are taken and some fed on milk, which contains very little iron, and others fed on milk plus iron given artificially, the livers of the latter are found to contain much more iron than the former, which had no extra iron given in the milk.

Iron can be absorbed by other parts of the small intestine other than the duodenum, as has been shown by Socin, who ligatured a piece of the ileum after having introduced into it a large quantity of iron. Within a few hours all the iron had disappeared, showing that the ileum can take up iron as well as the duodenum. After giving iron by the mouth the epithelial cells of the large intestine and cecum also give a strong reaction. This is interpreted to mean that iron is absorbed by the duodenum and the first part of the jejunum and is taken into the spleen. Later on the iron gets to the liver, where it rests for a time, to be eventually taken up by the blood again and excreted into the large intestine and cecum. The iron does not escape by the bile, as the composition of the bile is not altered by giving iron to the body.

The liver is the organ that has most to do with the storage and with the metabolism of iron. The liver in intrauterine life receives a very good blood-supply by means of the branches of the umbilical vein carrying arterial blood from the placenta. At

birth the liver forms from 4 to 5 per cent of the body weight, which is twice the corresponding weight in the adult (21/2 per cent of the body weight). It seems that the liver performs a similar storage function with regard to iron as it does with fats and carbohydrates. When the iron is needed it is given up by the liver into the blood again, and used to make new hemoglobin and red blood-corpuscles. The absorption of iron from the intestine is, however, regulated by the demand, so that rarely are larger amounts than normal found in the liver, which fact the analysis of Ashby bears out. In some diseases, such as pernicious anemia, hypertrophic cirrhosis of the liver, there is a large amount of iron found in the liver which has been derived from the blood.

The liver has also other functions in connection with this iron. Together with spleen it separates the iron from effete iron-containing pigment which it stores in the form of a loose compound. The liver also transforms this iron into an organic compound, ferratin, which is ready for assimilation by young red blood cells, and is given out as it is required to make new hemoglobin.

When iron is given to a patient much the greater quantity is excreted again in the feces, but at times it appears as if large quantities are kept in the body. Thus a patient with an ileocecal fistula was given 416 mg. of iron citrate in two days, but only 338 mg. ever appeared in the feces at the fistula.

As the liver has such a large bloodsupply and is such a large organ in proportion to the body in infancy, it is not surprising that it should have a store of iron at birth and that it should regulate the supply of iron to the body. During a healthy pregnancy, which Bar defines as "fetus sanus in matre sana," the mother has the power of extracting from her food all the materials required for the growth and development of the fetus, and she in no way suffers by this self-sacrifice to the fetus. During the last three months or so of intrauterine life a store of iron is laid up in the liver, so that the infant when born starts its life with a good supply of iron in order to supply the needs of the hemoglobin and red blood cells, which are to be formed as the infant grows. The necessity for this store of iron is made apparent when it is understood what a very small amount of iron there is in milk (7 to 14 times as little iron as in any other food), and when it is remembered that normally an infant has no other food than breast milk for eight to nine months at least, and often for much longer than this. This store of iron, which the infant starts life with, has thus to last till it can take food other than milk, and so obtain a sufficient amount of iron. If the store of iron is too small to start with, or if it gives out, then the infant will become anemic for lack of iron if none is given in its food.

#### THE TREATMENT OF GALL-STONES.

KEHR is quoted in the Lancet of July 20, 1912, as having expressed the following views at a recent meeting of the Berlin Medical Society, when he read a paper on the indications for the medical and surgical treatment of gall-stones. He said that according to the researches of Professor Aschoff the formation of gall-stones depended on congestion in the gall-bladder and cholecystitis. Congestion without inflammation produced calculi of cholesterin which were absolutely innocuous. Gallstones might be left undisturbed so long as no symptoms of infection were present, and if cholecystitis by infection has developed the principal aim should not be to remove the stones but to overcome the infection. Gall-stones hold only a secondary position in the sequence of events, being not the cause but a product of the disease. Cholecystitis might terminate in recovery without the removal of the gall-stones.

Professor Kehr considered that an operation might be avoided in 80 per cent of cases of cholecystitis, because in the great majority of instances the infection might be overcome, with the result that the disease becomes latent. The question whether a

case would come to this stage of latency was sometimes rather difficult to answer, and great experience was required for the formation of a reliable opinion. When the region of the gall-bladder continued to be painful between the attacks, when the temperature was rising, and when the patient's appetite, digestion, and general conditions were unfavorable, little hope existed that a state of latency would develop; when, on the other hand, the pains were lessened by the administration of castor oil a stage of latency might follow a visit to Carlsbad. It depended on the mode, the degree, and the duration of the infection and its influence on the liver and the patient's general state whether surgical interference was indicated. Internal treatment was indicated (1) in acute cholecystitis and cholangitis with the exception of gangrenous, perforating, seropurulent, and septic forms; and (2) in chronic cholecystitis, obliteration, cicatrization, and calcification of the gallbladder, but not in chronic cholangitis, nor in the so-called chronic obstruction of the bile-duct. Operation was absolutely indicated in cholecystitis acutissima, in chronic cholangitis, in acute septic cholangitis, in perforation of the gall-bladder and the bileduct, and in cancer; the question of operation was for consideration in cases in which the patient's health was continuously affected and he was unable to work. Professor Kehr laid special stress on the word "continuously." He said that these indications were rather difficult to recognize. Palpation was not always reliable. In chronic cholangitis, for instance, no tumor was palpable, and an operation was nevertheless indicated; in dropsy of the gall-bladder a considerable tumor may be present, but an operation was contraindicated. was absent in 50 per cent of cases of empyema, and icterus also in 30 per cent of cases of gall-stones in ductus choledochus. The clinical history was of the greatest importance.

In reporting the results of his operations Professor Kehr said that up to the present time he had performed 1866 operations on the gall-bladder and the bile-ducts; 1229 were uncomplicated cases, with a mortality of 3 per cent; in 307 of these cases cystotomy, cystendysis, and cysticotomia were performed, with a mortality of 2.3 per cent; 455 were cases of cystectomy, with a mortality of 3 per cent; and 467 were cases of choledochotomy and drainage of the hepatic duct, with a mortality of 3.4 per cent. In 637 cases complications existed, the mortality being 14.1 per cent. In 290 cases malignant complications were present—namely, cancer, biliary cirrhosis, and septic diffuse cholangitis, the mortality being here 78.6 per cent; so that the total mortality in cases with complications was 43.5 per cent.

### VERTIGO FROM THE STANDPOINT OF THE GENERAL PRACTITIONER.

STOCKTON in the New York State Journal of Medicine for August, 1912, has this to say concerning treatment:

It is expedient to have the eyes carefully refracted, and such relief given as may be possible to any aural defect, before attempting to relieve vertigo that may in part depend upon an intoxication or circulatory Several elements may be disturbance. simultaneously at work, and we should attempt systematically to remove them one by one. In the treatment of obscure cases, or those which depend upon irritability of the vestibular innervation, Stockton has had most success in following the advice of Charcot and Giles de la Tourette-that is. the administration of quinine or salicylic acid in sufficient doses to produce tinnitus. At first the symptoms are aggravated. The treatment should be continued for about three days. Following this there is improvement, sometimes the complete disappearance of vertigo, and it may remain absent for a considerable period of time, He has had little success with bromides, as recommended by Gowers, except in large doses and rather continuously. So much for the treatment of vertigo in general. there are many factors which may be involved in the etiology of vertigo, it naturally follows that a variety of therapeutic indications present themselves.

To correct faulty digestion, to secure sufficent gastrointestinal drainage, to relieve, through dietetic reform, the overtaxed metabolism, to improve general elimination, and to establish, so far as possible, the normal flow of unirritating blood—these include the ends which we would seek to obtain for the relief of vertigo dependent upon general causes.

## SUPRARENAL GLAND EXTRACT IN CARDIAC DYSPNEA AND CAR-DIAC DROPSY.

Voight in the Calcutta Medical Journal for June, 1912, reminds us that digitalis, strophanthus, convallaria, and caffeine are all useful in their turn; but sometimes one and all may fail us. There is no doubt that strychnine hypodermically is an invaluable remedy in failure of cardiac compensation; that the nitrites are of great service in some cases; that atropine subcutaneously relieves the dyspnea of others; that potassium iodide is not to be despised as a heart tonic; and that the Nauheim bath treatment, judiciously applied and carefully supervised, does wonders in the early stages of compensation failure.

But there is another remedy which can be relied on in some cases. This is suprarenal gland—the solution of the extract of the gland used hypodermically or by intravenous injection, or the gland substance given by the mouth in tablet form.

Voight has had under his care several cardiac cases in which dyspnea and dropsy were prominent symptoms, and in which suprarenal gland was administered. gives a report from his notes on two of these cases only. In the others the action of the remedy in combating the symptoms was maintained. In all, more or less severe dyspnea was relieved, sometimes by the hypodermic injection of from 5 or 10 to 15 minims of the 1-in-1000 adrenalin solution (Parke, Davis & Co.), at other times by a 5-grain tablet of the suprarenal gland substance administered by the mouth. When the dyspnea was not very severe, the dose of adrenalin solution injected hypodermically was from 5 to 10 minims (1-in1000 solution), and the 5-grain tablet of the gland substance was halved for each dose by the mouth. In general practice one cannot always make provision for the amount of urine passed by the patient in twenty-four hours to be accurately measured. But where he succeeded in making such provision while his patients were under treatment by hypodermic injections of adrenalin or by the tablets of suprarenal gland substance administered by the mouth, he almost invariably found the quantity of urine increased and the dropsy at least temporarily diminished by the treatment. Sometimes the apparent effect of the remedy in this respect was marked and striking.

#### THE THERAPEUTIC VALUE OF THY-ROID FEEDING IN MENTAL DISEASES.

In the Journal of Mental Science for July, 1912, EAGER makes these general remarks:

The disturbing question of how far improvement may have been due to rest and nursing may be met with the averment that it was not until prolonged care and other lines of treatment had been tried for a considerable time and failed to show any improvement in the patient's condition that he had recourse to the thyroid treatment.

The treatment is costly, entails close attention and care on the part of the doctor and nurse, and therefore it is of some practical importance to have some idea of the class of case in which it is likely to meet with most success.

It would appear from his own cases that it is not a remedy which is applicable to all forms of mental disorder with a tendency to chronicity, and certainly of no use in cases of secondary dementia, the object of all therapeutic measures being to save a patient from this hopeless condition.

All patients undergoing a course of thyroid feeding should be kept in bed under the observation of a careful nurse by night and day, and the pulse and temperature recorded.

Thyroid extract appears to play the part of a powerful alterative, and therefore

treatment should not be adopted except when the doctor is able to be constantly in attendance to observe the effects produced on the patient.

It will appear from the results obtained that cases more likely to be benefited by the treatment are those of stupor or melancholia occurring in adolescents, in which the condition is not of so long standing that nervous structures are likely to have been impaired to any great extent. Cases of dementia præcox are not favorable subjects for this treatment.

Any theory that it acts by producing a toxemia, although to some extent supported by the fact that the temperature is raised in most cases and the pulse-rate quickened, does not, however, hold good, since it fails to produce any benefit at or after the climacteric; but the theory that it acts by stimulating some internal secretion and likely enough that of the organs of reproduction is in agreement with the fact that it acts most beneficially during the period when the reproductive organs would normally be most active. Finally, signs of improvement must not be looked for during or immediately after the course of thyroid feeding, for they do not appear generally until about four to six weeks after the treatment has been discontinued.

#### THE ADMINISTRATION OF BICHLO-RIDE OF MERCURY TO A NURS-ING MOTHER.

HAAS in the Archives of Pediatrics for July, 1912, reaches these conclusions:

Bichloride of mercury, administered to the nursing mother, has a decided effect upon the gastrointestinal condition and nutrition of the nursling.

It is efficacious in a sufficiently large percentage of cases to make it of value as an addition to the therapy of this condition.

It is indicated in any gastrointestinal disturbance of the nursling, as it has thus far proved harmless, even when it failed to benefit. It is not a specific, but it is one of the very few drugs capable of influencing the metabolism of the mammary gland.

In specific cases, accompanied by gastrointestinal disturbances, the drug administered in this manner is probably specific in its action upon such process, although the other usual manifestations of syphilis are improved only in slight degree.

The mother of a syphilitic child should be permitted, and even encouraged, to nurse her child, bichloride of mercury being administered to her the while.

Digestive disturbance in nursing infants would appear to be benefited in between 35 to 40 per cent of cases by the administration of 1/32 grain of bichloride of mercury to the mother three times daily after meals.

#### THE TREATMENT OF SCARLET FEVER.

FISCHER writing in the Archives of Pediatrics for July, 1912, has this to say as to the treatment of complications:

Croup—Laryngeal Stenosis.—When this complication arises 5000 units of antitoxin plus intubation for the relief of the stenosis may be demanded. Great caution must be used in introducing the tube lest we produce ulceration or even false passages by applying force. Decubitus may follow traumatism during intubation or extubation.

Nasopharyngeal Irrigation.—Loose necrotic patches and postnasal discharges are a source of danger to the Eustachian tube. One must always bear in mind the ease with which pathogenic bacteria can enter the middle ear through the pharyngeal opening of the Eustachian tube. It is important to wash the nasopharynx with a normal saline solution morning and evening or oftener, because there is great danger of infecting the Eustachian tube. Following such washing the instillation of Dobell's solution of 20-per-cent argyrol solution will disinfect the nasal passage and in some cases prevent aural complications.

The Ears.—Daily examination of the middle ear should be made; thus can otitis be recognized early, and a congestion or bulging given early treatment, before an extension into the mastoid cells has developed.

Mastoiditis.—Excepting in rare instances,

he is not in accord with the too prevalent idea of operating on the mastoid for ordinary mastoid tenderness. A free incision into the drum is sufficient, as a rule, to relieve the tension of an acute otitis media. If such tension is not relieved and bulging persists, then another paracentesis should be performed, and thorough drainage thereby established. The external application of a hot-water bottle or a hot poultice will frequently aid in aborting mastoiditis. The ice-bag and ice-coil have given him no satisfaction.

Cervical Adenitis.— When such complication exists, then a careful inspection of the nasopharynx and the middle ear should be made. This is necessary so that we can exclude such complication before treating the glands. A warm flaxseed poultice and the daily inunction of compound iodine ointment rubbed thoroughly into the glandular tissue once daily have proven effective in very many cases. The above treatment applies only to hard, swollen, non-suppurative glands.

Vulvovaginitis. — Catarrhal discharges due to the streptococcus and the gonococcus will be a source of serious annoyance during the course of scarlet fever, and demand strict hygienic measures, otherwise there is danger of infecting the eye. A case of gonorrheal ophthalmia was recently seen by Fischer at the Willard Parker Hospital in which blindness followed the infection. The instillation of a 20-per-cent nitrate of silver solution by means of a medicine dropper, once, in the vagina, is usually sufficient to destroy the gonococci. For cleansing the parts he advises a solution of powdered alum 1 drachm, borax 1 drachm, and 1 pint of tepid water, to be douched morning and evening.

Vaccine Therapy.—The injection of 50,000,000 to 100,000,000 gonococci in the form of a vaccine has been tried by him in the treatment of vulvovaginitis. While in some isolated cases the discharge lessened, gonococci persisted. In cases of multiple furunculosis due to the staphylococcus almost specific results followed an autogenous vaccine injection of 50,000,000

to 150,000,000 bacteria. But in no other infection was this specific effect of vaccine therapy apparent.

Serum Therapy.—There is no specific serum in use to-day, because neither the etiology nor the bacteriology of this disease is understood, and yet the presence of streptococci in the throat and in many of the discharges lends color to the supposition that it is the causative factor.

Moser's antistreptococcus serum showed specific effects in some cases within twenty-four to forty-eight hours after one injection at Escherich's clinic. This was the case with antistreptococcus serum as well as streptolytic serum made in this country. No specific action could be traced to these serums. Complications arose just as before.

The local treatment with Burrow's solution, or the use of a 20-per-cent aqueous ichthyol solution, is good in some cases. Fischer has seen excellent results from the use of the application of pure alcohol, the saturated gauze being covered with oiled silk. The supersaturated solution of magnesium sulphate is very successfully used at the Willard Parker Hospital and is worth recommending.

Pertussis.—When pertussis complicates scarlet fever, large doses of codeine should be given—one-eighth to one-fourth grain every three hours for a child one to two years old. If older, then one-fourth to one-third or even one-half grain repeated every three hours has relieved the paroxysms, and induced sleep. A plaster support to the ribs will modify the cough, if applied very snugly. When codeine fails, sodium bromide combined with chloral hydrate may be tried.

Measles.—No complication is dreaded more than measles, because of bronchopneumonia, croup, otitis, and empyema supervening. Exposure to cold draughts in bronchopneumonia ends fatally. Warmth or moderate temperature is well borne. Dry cupping and warm moist fomentations soothe and relieve pulmonary congestion. Small doses of Dover's powder are useful.

Active catharsis relieves toxemia. Warm demulcent drinks are indicated.

Nephritis.—Daily supervision of the urine will be the guide for an early diagnosis of acute renal congestion, and show when nephritis develops. Suppression of urine demands the application of dry cups twice a day, followed by a warm bath at the temperature of 102° to 104° F. for about two minutes, after which the patient should be wrapped in a warm bath towel and covered by warm blankets. A cup of warm tea or hot lemonade will stimulate both diuresis and diaphoresis. This active treatment should be repeated every twelve hours until acute suppression subsides.

Diuretics.—Agurin, diuretin, and theocin, 2 to 5 grains, for a child three to five years old may be given three times a day.

The salt-free diet, so plausible in theory, is not proven useful in practice. Fischer could not convince himself of the absolute value of salt-free diet in any one case.

## FATAL POISONING DUE TO THE USE OF PICRIC ACID AS A DUSTING POWDER FOR A BURN.

In his well-known work on toxicology the late Dr. J. Dixon Mann stated: "Very few cases of picric acid poisoning are recorded, and none with fatal results." However, since the use of picric acid as an application to burns became popular, many cases have been recorded in which toxic effects were produced. The usual application is a saturated solution (approximately one per cent). The symptoms of picric acid poisoning are rapid pulse, papular or erythematous rash, and yellowness of the conjunctiva and skin. There may be vomiting and diarrhea. The urine is discolored and has been variously described as darkred, dark-green, or port-wine color. long ago as 1903 Mr. A. MacLennon reported in the columns of the Lancet two cases in which toxic effects followed the use of picric acid in burns. In one case the acid appeared to have played a part in producing a fatal result. A saturated watery solution was applied with benefit to a burn from steam so extensive that recovery was very doubtful. After about three days a brilliant-red "measly rash" developed. The temperature became high and the urine of a dark-greenish hue, and the patient died comatose. In the other case—burn of the arm and leg—the same rash developed and the general disturbance was extreme. However, these two cases were the only ones, out of many hundreds, in which toxic symptoms were observed. Another case in which severe symptoms were produced was reported by Dr. E. J. Elliot.

In the South Africa Medical Record of July 13 Mr. J. A. Mitchell has reported the case of a European girl, aged two years and three months, who sustained a severe burn of the left foot due to boiling fat. Her mother cleansed the burn and treated it with a dusting powder from a "first-aid" outfit supplied by an agent of the St. John Ambulance Association. The dusting was repeated at intervals for fourteen days. Eighteen days after the accident the child was taken to a medical man. The skin of the lower half of the left leg was of a bright-yellow color. There was a large brownish-yellow patch on the right side of the trunk and similar patches over the elbow and knees. The conjunctiva and skin generally had a dusky, yellowish tinge. The urine was of brownish color and micturition was frequent and apparently pain-The pulse varied from 100 to 150. The child assumed a frightened look when spoken to even by her mother. There were vomiting and severe diarrhea, with yellowish slimy motions. Three days later general erythema developed. The child became stuporous, collapsed, and died on the twenty-second day after the accident. A necropsy was held by the district surgeon, Dr. A. J. H. Thornton. The skin and whites of the eyes showed a yellowish tinge. There was an erythematous rash, with dry, thickened, and slightly scaly skin over the left side of the chest, left leg, and right elbow. The bases of both lungs, the liver. and the spleen were congested. The kidnevs were normal. A sample of the dusting-powder used was analyzed by Mr. Lewis of the Government Analytical Laboratory, Grahamstown, and found to consist of picric acid 17 per cent and boric acid 82 per cent. The contents of another tin from a St. John's "first-aid" outfit were found to be badly mixed; lumps of boric acid up to the size of a pea could be picked out, and analyses of samples from different parts of the tin yielded percentages of picric acid varying from 5.9 to 7.1.

Picric acid has proved a valuable, and in general safe, application in the treatment of superficial burns. But the more numerous but less serious recorded cases of toxic effects show that care should be exercised in the case of extensive burns and a watch kept for symptoms. The case just related seems to us an emphatic condemnation of the practice of supplying picric acid in a "first-aid" outfit for the use of the public. A one-per-cent solution is recommended by His Majesty's inspectors of explosives to be kept handy for "first-aid" for burns. Probably a single application would be quite free from danger, but the proclivity of some of the laity for amateur doctoring is well known, and having learned from this recommendation that picric acid is a "good thing for burns" they may, as in one case reported, continue the treatment. It seems to us that a warning of some kind should be given on the label of the bottle. -Lancet, Aug. 17, 1912.

#### MIXED NARCOSIS.

Writing in the Australian Medical Gazette of August 17, 1912, Embley reaches these conclusions in regard to mixed narcosis:

- 1. The purposes for which morphine, atropine, and scopolamine are used in mixed narcosis appear to be justified, with the exception of the employment of atropine and scopolamine, to compensate the respiratory depression caused by morphine.
- 2. Morphine depresses respiratory efficiency. In some instances this is much more marked than in others.
  - 3. Neither atropine nor scopolamine com-

pensates the respiratory depression caused by morphine. Both possess the property of augmenting respiratory efficiency in the normal animal, but in the severe forms of depression of morphine they are incompetent, whilst in the milder forms the augmentation is of too short duration to be of service in clinical usage.

- 4. During employment of the closed method of mixed narcosis, respiratory depression does not occur. When marked respiratory depression occurs in the open ether method of mixed narcosis, the closed method should be substituted. Should marked respiratory depression be found to continue after the operation and to cause anxiety, CO<sub>2</sub> should be administered, much diluted, in the inspired air.
- 5. If the dosage of morphine be confined to the lowest useful limit—say the 1/6 to 1/8 grain for adults and the usual dose of atropine, say 1/100 to 1/150 grain, or scopolamine 1/100 to 1/150 grain—and the anesthesia by open ether be not carried to too deep a level, marked respiratory depression will rarely occur.
- 6. In the small minority of cases in which morphine causes marked respiratory depression, it is due to abnormal innervation of the respiratory mechanism. In such cases even the smallest serviceable quantity of morphine will produce this depression.
- 7. Omnopon (the total alkaloids of opium) appears to offer a way of obtaining the advantages of morphine in mixed narcosis with a diminished risk of respiratory depression.
- 8. In the mixed narcosis of chloroform, respiratory depression is apt to be absolute and persistent in those cases of abnormal innervation. Such cases are not necessarily dangerous, providing that artificial respiration be maintained till autonomic breathing returns. The administration of CO<sub>2</sub> during artificial respiration is the best treatment. The CO<sub>2</sub>, of course, should be used so that some approximation to 5 per cent be inspired intermittently.
- 9. Clinical experience of omnopon, scopolamine, nitrous oxide and oxygen with ether, favorably impresses one. The after-

effects are much less and the patient proportionately less unhappy on recovery. Much less ether is used than by other methods.

#### PITUITARY EXTRACT IN LABOR.

SIGURET reported to the Société d'obstétrique et de gynécologie de Paris, on July 8, his observations at the Tarnier clinic of twenty-seven parturient women who received injections of pituitary extract. He used exclusively extract from the posterior lobe of the goat in doses of thirty centigrammes and from the posterior lobe of the ox in twenty-centigramme doses. No unfavorable results were noted, and the arterial tension and the pulse of the mother, as well as the fetal heart-beat, were unaffected; hemorrhage was perhaps somewhat profuse. As reported in Presse Médicale of July 13, the action of the extract was prompt and the injection was followed by a "tempest of contractions;" in two cases there was vomiting.—New York Medical Journal, Aug. 3, 1912.

## THE TREATMENT OF NEVI.

Basing his views on the results obtained in more than two thousand cases, Bunch, in the British Medical Journal of August 10, 1912, writes on the use of carbon dioxide snow. He says that the chief essential about the stick of carbon dioxide when ready for use is that it shall be very hard; in Bunch's opinion it should be so hard that it sinks in water, and it can then be cut or molded to a point so fine that a nevus no bigger than a pin's head can be frozen and removed without any involvement of healthy skin. Nevi of the size of a florin can similarly be treated with a single application, and any lesion between these sizes, however irregular in shape. For larger lesions, two or more applications, approximating but not overlapping, are necessary, and it is then best to use a square stick in order to secure accurate coaptation of adjoining areas. He finds it convenient to have a second smaller stick, pointed at one end, ready to apply to the peripheral irregularities of any nevus larger than an inch in diameter. He makes a practice of freezing right up to the edge of the nevus, or even 1/16 inch beyond it, for nothing is more tedious than having afterward to go all round the periphery with a fine point, destroying small portions which have been missed at the first freezing. The immediate effect of the application is to make the skin perfectly hard and white, depressed below the surrounding skin proportionately to the amount of pressure which has been applied. This pressure must not, when soft parts underlie the angioma, be greater than that required to press the blood out of the surrounding vessels, and the surface of the skin must be held as tense as possible during the application; where bone immediately underlies the lesion, somewhat firmer pressure may be made, remembering that the depth frozen depends, other factors being the same, upon the amount of pressure applied.

The duration of the freezing necessary can only be estimated from previous experience. In a baby a few days or weeks old a very much shorter time will suffice than in an adult. He finds that a second freezing of, say, ten seconds after the tissues have thawed out will produce a greater effect than one continuous freezing of twenty seconds, but in warty growths it is sometimes necessary to give as much as two consecutive freezings of sixty seconds each before a sufficient reaction is produced. The time required for thawing is rather longer than that for freezing; the skin then feels firmer, due to secondary hyperemia and extravasation of serum, and within an hour or two a vesicle or bulla forms. Unless the application has been extremely short, this vesicle does not become absorbed, and if not repeatedly punctured with aseptic precautions and drained it becomes infected. If possible, therefore, the fluid should be evacuated aseptically each time the bulla fills up, and a pad of sterilized cotton-wool is, under such circumstances, all the dressing required. When, however, such draining cannot be carried out efficiently, a dressing of zinc ointment should

be applied until the scab comes away. This takes place in about ten days, and a delicate, smooth, and supple cicatrix forms, which is at first pink, but later becomes paler and paler, until it is almost invisible. The resulting scar may at first be slightly depressed below the level of the surrounding skin, according to the nature of the lesion which has been treated and the extent of the freezing, but the scar becomes finally of the same tint as the healthy skin, equally soft and practically inconspicuous.

In the case of cavernous and pigmented hairy nevi and raised localized angiomata, excellent results are also obtained, but more than one application is usually necessary, and the scar, although delicate in texture and supple, is more conspicuous in proportion to the depth and extent of the original lesion and the number of applications made.

During the past two and a half years Bunch has treated over 2000 nevi by solid carbon and dioxide, apart from other skin diseases. For stellate, capillary, cavernous, and flat pigmented nevi the method is excellent, and gives most satisfactory results. For linear and nævus verrucosus, where there is much thickening and warty growth, it is not so good, but these cases are, of course, very rare. For port-wine stains it depends how far the corium and underlying structures are involved; the most unsatisfactory cases are port-wine stains with a nodular, irregular surface and warty projections, and for these there is no really satisfactory method of treatment. But for the vast majority of nevi there is no more effective, satisfactory, and painless remedy, nor one which gives such uniformly good results.

## THE TREATMENT OF SYPHILIS.

McNamara in the British Medical Journal of August 10, 1912, says that D'Arcy Power, in his article on the treatment of syphilis, recommends the administration of mercury bichloride, and gives two prescriptions for this preparation.

Some years ago McNamara pointed out, and, he believes, proved, that mercury bichloride was one of the least efficient preparations, and indeed, when given in hard water like the London water, often a useless preparation, for internal administration. In answer to the question, "What is the best preparation of mercury to be given in syphilis?" he wrote:

"Since each of the numerous preparations of mercury is believed to be of benefit in syphilis, and since the only constant factor in these various preparations is the metal itself, we must suppose that it is the metal itself which is the curative agent, and not any of the substances with which it is combined. This fact suggests the answer that the best preparation of mercury is that which in safe, unirritating doses contains the largest quantity of the metal; for if mercury be the enemy of the syphilitic virus it is inconceivable that the very small quantity of the metal contained in the onesixteenth of a grain of the perchloride can be as useful as the comparatively large quantity contained in a grain of mercury with chalk. This theoretical advantage of preparations containing a large quantity of the metal is also confirmed by experience; for one of the most convincing proofs of the value of mercury in syphilis is its rapid and striking influence over infantile syphilis."

Now in this form of syphilis the hydrarg. cum creta is the preparation generally given, and its rapid effect is, McNamara contends, due to the large quantity of the metal circulating in the small body of the infant. Moreover, he has seen patients progress but slowly or not at all while taking corrosive sublimate, and who improved rapidly when put on a course of mercury with chalk, or subjected to a course of inunction.

Again, he has seen several cases of severe syphilitic iritis develop while patients were taking corrosive sublimate, and he has seen again and again grave tertiary lesions follow even a prolonged course of preparations containing a small quantity of the metal. But he has never seen such after a prolonged uninterrupted course of inunction, or of preparations like mercury with chalk and blue pill. Corrosive sublimate, which

is so frequently given in syphilis, is the least efficient form in which to administer mercurv internally, for not only does it contain in a safe dose an exceedingly small quantity of the metal, but even this small quantity frequently fails to reach the patient, for when given (as it frequently is) in solution in ordinary water containing lime salts, it is liable to decompose, the mercury becoming precipitated at the sides or on the bottom of the containing vessel. Theoretical considerations, then, as well as practical experience, point to preparations containing a large quantity of the metal as the best for administration in syphilis. But while it is of advantage to have a large quantity of mercury circulating through the tissues of the patient, the quantity must not be so large as to produce salivation, purgation, or any other injurious effects; for when the struggling tissues are injured by mercury or by any other cause, then the enemy triumphs, and the worst forms of syphilis may ensue. It will be seen that the view which he is advocating as the best method of treating syphilis—namely, maximal doses, short of mercurialism, of preparations of mercury containing large quantities of the metal—is a compromise between the old school, which did harm with excessive doses, and a modern school, which believes in minimal doses.

## THE CUTANEOUS REACTION OF SYPHILIS.

Wolfsohn (Bulletin of the Johns Hopkins Hospital, August, 1912), after quoting Noguchi's method of preparing luetin and his method of applying his test, states that Noguchi showed that in order to cultivate the pallida directly from the primary lesions in man two all-important conditions must be considered: (1) The maintenance of strict anaerobiosis; and (2) the property possessed by the spirochæta of migrating in solid media in which it is multiplying.

The culture media used consists of ascitic fluid containing a piece of sterile placenta, and ascitic fluid agar, also containing a piece of placenta.

The organisms are grown for six to fifty days. After sufficient growth has taken place the tissue is removed, and the solid media and organism ground in a mortar and diluted with the ascitic fluid culture. The mixture is then heated for sixty minutes to 60° C., and 1 per cent trikresol is added as an antiseptic. Noguchi has called this final sterile emulsion "luetin," and this preparation has been used in reported cases. As pointed out by Noguchi, pure cultures of the treponema pallida offer many advantages because not only are pallida of different ages present, but also the metabolic products, these being important factors in establishing allergic states. The method adopted by Noguchi was strictly followed: Both arms of the patient were cleaned with 95-per-cent alcohol; 0.1 Cc. of the luctin was injected intradermally into the left arm over the biceps muscle, and the same amount of the control emulsion (which consists of the media only and no pallida) was similarly injected into a corresponding site on the right arm. Observations were made daily thereafter over a period of twelve to thirtysix days.

To insure the sterility of the emulsions, cultures from them were frequently made.

Every patient upon whom the luetin test was tried had a Wassermann reaction done on his blood serum and upon his cerebrospinal fluid, when this was indicated.

Very few reactions presented any difficulty in interpretation—i.e., practically all the reactions were definitely negative or positive.

In the majority of cases, twenty-four hours after the injection, the skin in the injected arm showed a slight blush, and a moderate induration or papule formation. Very seldom was any tenderness or itching complained of, which has been only too frequent in the cases showing positive reactions.

Almost invariably, after forty-eight hours, the injected site would be free from induration and erythema; a pin-point ecchymosis or perhaps a small yellowish pigmentation alone remained. If the patient has irritated the site of injection a small pustule

might form, but this latter has only developed in two of the control cases and has not given rise to confusion in interpretation.

Though the type of reaction in positive cases varies greatly, in general the gross characteristics are induration and erythema. In analyzing the various types of reaction found in the different stages of syphilis, the following classification includes all the essential varieties:

In the papular form arising at the site of the injection within twenty-four hours an indurated papule develops which varies in size from 5 to 15 mm. in diameter, and this is surrounded by more or less erythema and is usually quite tender. The reaction gradually increases in size until the third or fourth day, when it either regresses or develops into the pustular form. The control injection (in the other arm) in these cases usually shows no reaction after twenty-four to forty-eight hours:

In the vesicular variety this is generally seen in cases in which a moderate reaction rapidly follows the injection, and it occasionally appears as a bleb, but more often as a group of small vesicles superimposed on an indurated, tender base. As a rule, the vesicular passes into the pustular variety.

The pustular form may be primary or secondary. When primary it occurs usually in association with the violent reaction seen in latent or in late tertiary stages of syphilis, where no treatment had been previously administered. When secondary it occurs in the papular form or develops early from the vesicular stage. The pustules usually rupture spontaneously with subsequent crust formation.

In a few latent and parasyphilitic cases a week after all evidence of reaction at the site of the injection had subsided a hemorrhagic pustule appeared, which when opened exuded a semifluid grumous hemorrhagic material.

The torpid form is the name aptly given by Noguchi to a variety. It was found that in many of the parasyphilitics, showing vascular luetic lesions, for three to seven and even twenty-eight days following the injections the reactions were quite negative; but the site of injection, after this period of quiescence, possesses a bluish-red tinge, and a smaller or larger indurated papule is felt. This soon increases in size, is not tender, and in the two or three days following develops into a pustule, after which there is a regression of the reaction. In these cases the control injection site showed nothing abnormal.

In brief, the reactions may be said to be (1) mild, (2) violent, or (3) torpid, according as the signs slowly develop to a maximum and regress; start in violently, reaching an early maximum, which is maintained for twenty-four to seventy-two hours, and then subside; or develop late and show only a mild reaction after a latent period and never become marked.

In no case did scar formation follow after local manifestations subsided, but in many instances there was more or less pigmentation, according as the site of injection was markedly hemorrhagic or not.

Of the seventy controls in which the patients were suffering from diseases other than syphilis-e.g., soft chancre, mitral insufficiency, myocardial insufficiency, cancer of the tonsil, acute rheumatic fever, pregnancy with still-born infant, senile palsy, brain tumor, hypophysis tumor, pernicious anemia, peliosis rheumatica, sarcoma of the ileum, myelogenous leukemia, pulmonary tuberculosis, chronic nephritis, rickets, infectious arthritis, etc.—when no history of syphilitic infection could be obtained, and where the Wassermann reaction was negative in each case, no positive luetin or control reactions were obtained. In two cases. small non-indurated pustules developed within three days after the injection, but these could be easily distinguished from the positive reactions. No constitutional symptoms were complained of or noted in these cases.

The Weil test for syphilis, though perhaps not largely applicable, is of interest from the fact that Weil claims for it much greater activity in cases of latent syphilis than any hemolytic test. He also states that following treatment it long remains positive. He found that syphilis rendered blood-corpuscles resistant to the hemolytic action of snake venom. In the application of this test the patient's blood is washed thoroughly in a 2-per-cent solution of sodium citrate. The venom of the cobra diluted 1:10,000 to 1:40,000 is added to the tube containing the washed corpuscles, and this is incubated. Absent hemolysis in dilutions up to 1:20,000 is regarded as positive. The slightest degree of hemolysis in the tube diluted 1 to 30,000 is a negative, and a strong negative is present if there be the slightest trace of hemolysis in the last tube—dilution 1 to 40,000.

In syphilis of the nervous system "cytodiagnosis" is of some aid. A predominance of lymphocytes in a clear fluid indicates either cerebrospinal syphilis, tabes, or tubercular meningitis. An increase in polynuclears points toward an acute meningitis, though in mixed infection there may be pus in a tuberculous condition.

## THE WASSERMANN REACTION IN DISEASES OTHER THAN SYPHILIS.

MARCHILDON (Interstate Medical Journal, September, 1912) quotes extensively from literature as to positive Wassermanns in conditions other than syphilis. He notes that Boas has collected 1064 cases of normal individuals and patients with a great variety of diseases in which the Wassermann test was made. In these there was only one single patient who gave a positive reaction in which syphilis could be excluded, and that was one of scarlet fever. In all the other cases in which a positive Wassermann reaction was obtained a more complete examination, or the further course of the disease, showed that the patient had syphilis.

That a positive Wassermann reaction sometimes occurs in leprosy, malaria, tropical diseases, and recurrent fever cannot be denied, although this is evidently not the rule. In this climate the unusual occurrence of such diseases would not lessen the practical use of the Wassermann test in any way. In scarlet fever a Wassermann reaction seldom occurs, if at all, and when it

does it disappears rapidly, and, therefore, would also have no bearing upon the practical use of the test. One may conclude that although an occasional positive Wassermann reaction may be found apart from syphilis, it must for all practical purposes be considered characteristic for this disease.

# ON THE VALUE OF A QUANTITATIVE ALBUMEN ESTIMATION OF THE CEREBROSPINAL FLUID.

GREENFIELD (Lancet, Sept. 7, 1912) calls attention to what he regards as a valuable diagnostic means, especially from the standpoint of the surgeon. He uses a modification of Noguchi's butyric acid reaction. Two Cc. of cerebrospinal fluid and 5 Cc. of butyric acid are boiled together. One Cc. of normal sodium hydrate is then added and the tube again boiled, when a flocculent precipitate is thrown down. The result of the test is poured into a graduated centrifuge tube, which gives readings to 0.1 Cc. with fair accuracy; each 0.1 Cc. by this method is equivalent to 0.025 per cent. Normal fluids give readings of 0.05 to 0.2 Cc. per 1000. Uncomplicated syphilitic meningitis and parasyphilitic disease gave readings of 0.6 Cc., or 1.5 per 1000. In many cases of syphilitic nervous disease, even when lymphocytosis was present, no increase of the albumen content was found. probably incident to the fact that the disease was mainly vascular, or that the meningeal disease had subsided. The albumen content may be raised in tabes dorsalis to as high a degree as in any case of general paralysis. In chronic cases it was often not above normal. As to the cytological examination, any count above 15 in a high-power field of a thoroughly centrifuged preparation is regarded as pathological, and apart from meningitis appears to be pathognomonic of syphilitic or parasyphilitic disease. cases of brain tumor give a practically normal albumen content. Exceptionally it may be very high. In the spinal tumor the fluid may be highly albuminous.

The author concludes that the finding of a high albumen content in the cerebrospinal

fluid seems to be in almost every case an indication for operative treatment. Where the cause is syphilitic meningitis much good may be done by promoting free circulation of the cerebrospinal fluid to the lumbar segments of the cord, and where a level of anesthesia or paraplegia is found the operation is frequently followed by very good results. In such cases a cyst of fluid is often found at the operation, pressing on the cord and practically acting as a tumor.

Apart from syphilitic cases the diagnosis is limited to spinal tumors, or other compression paraplegia, where the clinical history would make the diagnosis simple. Pachymeningitis cervicalis hypertrophica might possibly cause a similar condition of the fluid, and in this condition, as shown by Horsley's results, operative treatment is often extremely beneficial.

Considered as a diagnostic sign of spinal tumor, examination of the cerebrospinal fluid seems to have been too much neglected, and in the absence of other evidence may be of the greatest value.

## THE SURGICAL TREATMENT OF AORTIC ANEURISM.

MACEWEN (Annals of Surgery, November, 1912), after calling attention to the difficulties and dangers incident to other forms of treatment, strongly commends the method put forward by Sir William Macewen of introducing a fine steel needle, highly polished, into the interior of the aneurismal sac or dilatation, and scratching very lightly the inner surface of the opposite wall, so as to produce a series of slight abrasions of that surface. In this operation it is not sought to produce any red thrombus, but rather, by wounding the sac wall, to set up a process of repair which ultimately will lead to a thickening and strengthening of the wall, if not to complete obliteration of the sac. He has found that, subsequent to this operation, a red thrombus does not form, but that a white thrombus is deposited. This white thrombus probably consists at first of a deposition of colorless fibrin, produced by the action of the leucocytes coming from the damaged wall of the vessel, acting upon the serum derived from the same source. This white thrombus is at first small in amount, seals up the damage in the vessel wall, but does not cause any marked narrowing of the lumen of the vessel. At a later stage embryonic cells, derived from the various tissues wounded by the needle, appear, and replace the fibrin, so that in a short time the white thrombus is replaced by granulation tissue, which at a still later period becomes converted into adult tissue, probably largely composed of fibrous tissue.

A remarkable point about this exudate is that once its formation has been started it tends, under favorable circumstances, to gradually increase in quantity, fresh fibrin being slowly deposited on the surface, to be replaced later by fibrous tissue. In some cases of aneurism of distal vessels this process of thickening of the vessel wall has gone on gradually over a period of weeks or months, until ultimately the vessel has become completely occluded. No obliteration has been observed in the aorta, the force of the blood stream in that vessel presumably checking any attempt at undue narrowing of the normal lumen.

The advantages of this process are obvious. In the first place, there is no sudden blockage of the vessel; on the contrary, the process is essentially a very gradual one, abundance of time being given, in those cases in which complete obliteration is going to take place, for the thorough development of the anastomoses, and hence strain upon the heart is obviated. In the second place, the thrombus, instead of being large and loosely adherent to the vessel wall, is at first small and is intimately associated with it, rendering detachment practically impossible; and, in the third place, the thrombus becomes progressively converted into granulation and adult tissue as it increases, so that detachment of emboli cannot occur.

Clinically, also, the process has its advantages. It is easy of application; in most cases no incision is required, and hence an anesthetic is unnecessary; excitement is minimized, and struggling, with consequent

severe cardiac strain, eliminated, while the patient suffers but little discomfort either from the introduction of the needle or from its presence, even when it is retained for several hours.

A case is reported as absolutely resistant to medical treatment, probably one of aneurism of the arch of the aorta, treated by the graduated method by the introduction of a needle repeated several times.

# THE LATE RESULTS OF SUPRAPUBIC PROSTATECTOMY FOR SIMPLE ENLARGEMENT OF THE PROSTATE.

WALKER (Clinical Journal, July 31, 1912) records the late results of 112 cases with an immediate mortality of 5 per cent. In all these cases at least 18 months have passed since intervention. There is practically no selection, operation being refused only when it was obviously inapplicable because of the moribund condition of the patient. He points out that when the prostate enlarges and extends it does so in two directions, backward outside the bladder and upward into the bladder. The expansion outside the bladder strips the seminal vesicles from the bladder base, so that instead of lying above the prostate they come to lie behind it. The upper portion of the enlarging prostate insinuates some part of its bulk through the lumen of the sphincter of the bladder and projects into the cavity of this viscus, carrying with it the mucous membrane of the prostatic urethra. The intravesical portion increases in size and the sphincter of the bladder becomes more and more dilated, until, in a large prostate, it forms a wide circle, enclosing within its grasp a mass of prostate around which the thumb and forefinger can barely meet. In the enucleated prostate a deep groove is seen separating the intravesical from the extravesical portions of the specimen and caused by the pressure of the sphincter.

With the prostate the prostatic urethra is removed, but in the great majority of cases a strip of mucous membrane from the posterior wall of the prostatic urethra, extending from the verumontanum to the membranous urethra, is left adherent to the posterior wall of the cavity from which the prostate is removed. After removal of the prostate there remains a cavity which is roofed over by the base of the bladder. The opening from this cavity into the bladder lies at the anterior part of the roof, and the greater part of the roof is formed by the trigone as far back as the ureteral orifices. The walls of the cavity are fibrous and contain shreds from the capsule of the prostate, and occasionally portions of prostatic tissue are left adhering.

In the upper part of the posterior wall, lying almost transversely, are the seminal vesicles, which can be exposed from within the cavity by dissecting away a layer of fibrous tissue. Below this, in the middle line, is a vertical strip of mucous membrane from the posterior wall of the prostatic urethra.

Walker holds that the normal manner in which patients micturate after prostatectomy proves that the prostatic urethra has nothing to do with this reflex act since it is usually removed, and holds rather that the increasing distention of the bladder stimulates the sensory nerves and gives origin to that sensory contraction which causes passing of the water. He states that in no case of suprapubic prostatectomy has there resulted incontinence of urine. Later autopsies have shown that the sphincter dilated by the prostatic enlargement and with some of its fibers torn away at the time of enucleation contracts, reducing communication between the bladder and prostatic cavity to an opening which will admit the point of the little finger. Here contraction ceases and the rounded edge of the opening becomes hard, fibrous, and rigid. This is most evident on the posterior two-thirds of its circumference. The anterior third passes smoothly and vertically from the anterior wall of the bladder with hardly a break into the anterior wall of the prostatic cavity. In this fibrous circle there is capacity for neither contraction nor dilatation. If a catheter with a terminal opening is passed along the urethra until the eye is just beyond the compressor urethræ, the urine begins to flow and the bladder can be emptied with the catheter lying in the prostatic cavity.

The compressor urethræ thus acts as the sphincter of the bladder in these cases. In some cases the urine is retained by the action of the sphincter for some months after operation, and later the function of the compressor urethræ is established. In about half of the cases the sphincter vesicæ did not resume its function, and the effective sphincter was the compressor urethræ.

In the strip of mucous membrane extending from the verumontanum down to the membranous urethra, and adhering to the posterior wall of the cavity from which the prostate has been removed, the verumontanum is frequently found intact, the mucous membrane of the urethra having parted just above the point at which it is held down by the ejaculatory ducts. In other cases the verumontanum is removed with the prostatic urethra. In a few cases examination of the seminal vesicles by rectal palpation shows that they are dilated, and rarely there is dilatation and thickening of the wall, which would indicate that obstruction of the ejaculatory ducts was present. the majority of cases there is neither dilatation nor thickening. Therefore in cases in which the verumontanum is intact and the vesicles are not dilated or thickened there is no destruction of this part of the genital This forms a very considerable proportion of the number of cases. In the majority of cases when the general health is good the sexual vigor is unimpaired.

In regard to the sexual function no difference was observed—desire, erection, and ejaculation being normal in 35 per cent; a slight gradual loss of desire in 12.5 per cent; desire and erection normal, but no discharge of semen, in 32.5 per cent; diminished desire in 7.5 per cent; and abolished desire and function in 12.5 per cent. In this last case the ages ranged from sixty-six to eighty-six, and in four of them it was distinctly stated that the sexual power was failing or was completely absent before

operation. When ejaculation does not take place and the semen is discharged in the urine, the fault lies not in the ejaculatory ducts, but in the presence of the cavity from which the prostate was removed, and in the fact that the wall of this cavity is fibrous. There is therefore a break in the continuity of the wave of muscular contraction which should pass from the ejaculatory ducts along the urethra, and the semen collects in the prostatic cavity, to be washed out by the urine at the next micturition.

The restoration of the bladder muscle to its full vugor is one of the most striking features of complete prostatectomy. seven out of sixty reexamined cases there was residual urine, in the others none. two cases this amounted to 2 drachms, in two cases there was 1 ounce, in one 3 ounces, and in another 6 ounces of residual There was complete atony of the bladder before the operation, and this persisted after the operation. In a small percentage of cases cystitis persists, and gives rise to continued increase in the frequency of micturition and to nocturnal frequency. When the inflammation is confined to the bladder it is usually found there is extensive sacculation, and the bladder is repeatedly reinfected from these pockets. When there is bilateral renal infection no surgical interference can be undertaken, but where it is unilateral, nephrotomy with washing the renal pelvis may cause improvement, or nephrectomy may cure the cystitis. In several of the patients there were calculi in the bladder at the time of the prostatectomy. in the one class accompanied by a moderate degree of cystitis without decomposition of the urine, and the stone was composed of oxalate of lime, uric acid, or of these ingredients powdered with phosphates. There has been no recurrence of stone since prostatectomy. In the second class, with the urine decomposing and a severe grade of cystitis, there was recurrence of stone in all. The stones were crushed and washed out without difficulty. In one case a stone was removed from the prostatic cavity by perineal section. In three cases in which

no calculus had previously been present, calculi formed in the bladder at varying periods after prostatectomy. In two of these there was severe cystitis and decomposing urine.

The period taken for complete healing of the suprapubic wound is four weeks. In some cases it does not heal for five or six weeks. Walker has had two cases of suprapubic fistula following prostatectomy. In two cases there was hernia of the suprapubic incision one year and two years respectively after the operation. This usually results from a suprapubic wound which has been left open to granulate after the operation, and unnecessarily prolonged drainage by tubes in the suprapubic wound. There was one case in which there were recurrent attacks of severe venous hemorrhage every five weeks, which eventually were the indirect cause of death from cardiac failure. This case was not in the hands of Walker, and undoubtedly arose from a large vein which was temporarily plugged between each attack. The great majority of cases pursue a perfectly smooth course during convalescence, and after the operation are entirely without urinary symptoms. general health improves in a most remarkable degree, and patients that are worn out by long suffering and apparently beyond the aid of surgery regain their health and vigor.

## A MODIFICATION OF BARTLETT'S GASTROENTEROSTOMY CLAMP.

BUCHANAN (Annals of Surgery, November, 1912) calls attention to the fact that it is difficult to adjust the folds of stomach and jejunum at the same time and keep both folds exactly in place till the thumbscrews are tightened.

The clamp devised by Buchanan obviates this difficulty by fixing the center bar and having a separate pair of thumb-screws for each viscus. This allows the fold of stomach to be fixed in place first between the fixed center bar and one of the movable side bars. It therefore requires no atten-

tion while the intestine is being fixed between the center bar and the other movable side bar.

To render it possible to slip the rubber tubing over the middle bar and to facilitate removal, the latter is made in two sections, which are screwed together after the tubing is applied, and require to be separated for removal of the clamp after the anastomosis has been made.

The perfect rigidity, exact parallelism, and accurate control of pressure in Dr. Bartlett's clamp as well as in this modification will no doubt commend themselves to others as they have done to the writer.

## THE TREATMENT OF PERFORATING WOUND OF THE UTERUS.

SIGWART (Berliner klinische Wochenschrift, Jahrg. 49, Nr. 37) of Bumm's clinic says that in spite of repeated warnings physicians continue to use the curette improperly in cases of abortion, and as a result each year several cases of perforation of the uterus, with probably some serious injury to the intestine, mesentery, or omentum, are presented. Therapeutic measures have for their object, first, to rescue the patient from a life-threatening condition, and secondly, to restore to usefulness a uterus, usually that of a young woman. The life of the patient is especially threatened when the contents of the womb at the time of perforation are already septic and septic material finds its way into the peritoneal cavity, or when, on account of injury to the intestines, intestinal contents get into the peritoneal cavity. The question whether the uterus can be preserved or not depends upon the nature of the wound itself and upon the probable danger of peritonitisthat is, whether it is likely that healing would promptly occur without infection. If the conditions were such as to render it likely that the sacrifice of the womb would save the patient from consecutive peritonitis, while on the other hand its retention would increase that danger, the womb would, of course, be removed even in young women. It is always a question, however, whether through the total extirpation of the perforated uterus, in cases infected or supposed to be infected, the chances really are bettered to such an extent as to justify such a mutilating operation, and whether leaving the uterus in place really does constitute such a great danger.

In five cases treated in Bumm's clinic, in which both the uterus and the intestines were injured, conservative operation was done, and not only the lives of the patients saved, but the function of the genital organs preserved. In not a single case was the uterus sacrificed either on account of the danger of infection or the nature of the wound.

# EXPERIMENTS IN THE TREATMENT OF ACUTE ANEMIA BY BLOOD TRANSFUSION, AND BY INTRAVENOUS SALINE INFUSION.

Curtis and David (Surgery, Gynecology and Obstetrics, October, 1912) conclude as the result of investigation that infusion of normal salt solution temporarily resuscitates in acute anemia, but its usefulness is limited to a period of a few hours. It is probable that salt solution alone is capable of saving only an extremely small percentage of patients who would otherwise die from loss of blood. Clinically, it may be used to advantage until preparation for transfusion of blood can be made.

Our present knowledge does not indicate that the use of either fresh or preserved defibrinated blood is to be recommended.

Blood transfusion is the treatment of choice in severe anemia. The transfused blood is capable of resuscitating from otherwise fatal hemorrhages and physiologically replaces the blood which has been lost.

### THE OPERATIVE TREATMENT IN CAN-CER OF THE PROSTATE.

FULLER (Annals of Surgery, November, 1912) thus describes the operative procedure in this condition: The area of the prostatic obstruction is exposed to inspection and manipulation in the greatest degree possible through the simultaneous em-

ployment of both a suprapubic and a perineal opening. This accomplished, a boatshaped section of the growth is removed. The initial step in effecting this removal is the introduction through the perineal opening of a long-bladed, straight, blunt-pointed bistoury. The end of this instrument enters the bladder by way of the prostatic urethra. The knife thus lies above the middle portion of the obstruction. Through the suprapubic opening the knife can be observed and consequently accurately placed so that its end is brought beyond the intravesical limit of the growth, and made to assume a correct position in the middle line with its blade turned downward.

The patient being now in the lithotomy position, the operator with his right hand grasps the handle of the knife protruding from the perineal opening, while his left forefinger is introduced into the rectum, its ball being turned upward and made to touch the bowel wall, the left finger-tip warning him as to how far he should go. This cut represents, as it were, the keel to the boat. At the bottom of this cut the knife, without being withdrawn, is rotated so that its blade assumes a position to the right and at right angles with its former downward position. The left hand is then introduced suprapubically into the bladder, and the tip of its forefinger brought in contact with the blunt-pointed end of the knife, the right hand still holding the handle. Under such guidance a right elliptical incision is made, so that when the incision is finished the knife blade is left facing upward. knife is next replaced into the bottom of the first cut, which represents the keel of the boat, and a left-sided elliptical incision made exactly similar to that on the right. These two lateral incisions represent the body or belly of the boat. The two lateral pieces are now adherent along the line of, as it were, the gunwale. In the final detachment, scissors are first introduced through the suprapubic opening and cuts made on either side along the gunwale as far as can be. Then, the patient being again put into the lithotomy position, the scissors are introduced into the perineal opening and made to cut

on either side along the external lines of the gunwale. With the meeting of the ends of these lateral scissor incisions the two pieces which go to make up the boat-shaped mass are thoroughly detached, and can be extracted by forceps through the suprapubic opening. While using the scissors, especially suprapubically, moderate traction on a lateral piece through forceps is required, but the force so exerted falls far short of that required in effecting a separation without cutting instruments, and is never sufficient to tear tissues.

It can, of course, be argued against this method that there is little in the way of radical removal accomplished through its employment. In answer to such an argument Fuller states that although the method does not attempt to be so radical as some others, still it is in its results as radical as any, besides having apparently a greater element of safety through an avoidance of certain dangers. Sometimes an operative method introduced in order to avoid dangers will be found objectionable on account of the new dangers which it introduces; but that objection cannot be raised against this procedure. There might, of course, be danger of severe or fatal hemorrhage while making the lateral elliptical cuts. To avoid this Fuller recommends keeping within the general confines of the cancerous growth, and not trying to make a cut wide enough to get into unaffected tissue beyond. In fact. the operation is not advised for cases in which a growth is so circumscribed as to be confined largely to the prostatic limits, but for cases in which the surrounding structures have become to a considerable degree secondarily involved. In cutting through cancerous tissues, especially of scirrhous consistency, little hemorrhage is commonly encountered, provided, of course, the track of large vessels is avoided.

This operation is accompanied by less degree of shock than is one associated with greater manipulative efforts in connection with the removal of growth. As the seat of cancerous removal has a clean-cut margin, void of tissue laceration, there is less danger of postoperative sepsis and of vesi-

cal incontinence. In fact some cases have had no such incontinence, and in most of them it has not been a marked feature.

A case leaves the operating table after this procedure with both a suprapubic and a perineal vesical drainage tube. About the perineal tube is gauze packing which fills up the space left by the growth removed. An end of the packing protrudes from the perineum to facilitate its extraction. The packing and the perineal tube are usually removed on the fourth day. The suprapubic opening is closed, with the exception of the space left for the drainage tube. This last tube is removed on the seventh or eighth day.

Fuller has operated thus in eight cases, without mortality. There follows a period of comfort after the operation, until by the extension of the cancerous growth other organs are invaded.

#### THE LOCAL APPLICATION OF SALVAR-SAN IN CHRONIC SUPERFICIAL GLOSSITIS.

ALLPORT (British Medical Journal, Aug. 17, 1912; quoted by the American Journal of Dermatology, October, 1912) reports the case of a man aged fifty, who gave no history of lues, who had had a sore tongue for twenty years. The patient was a heavy smoker, and he presented a raised, circular growth near the left of the middle line upon the dorsum of the tongue, surrounded by a The edges were somewhat hard. The left margin of the organ was ulcerated and eating was difficult. A portion of the growth was examined microscopically, and it was reported to be of a suspicious character, though there were no definite proofs of malignancy. The patient was then put on iodide of potassium and mercury, and the growth was cautiously painted with various caustics. The man became worse. and it was thought at one time advisable to remove the diseased area surgically. However, a trial was made with the local application of salvarsan, and on May 7, 1912, the tongue was well swabbed over with a solution of this substance in glycerin-0.1 gramme of salvarsan in half a drachm of water and half an ounce of glycerin. The patient was given the solution with instructions to swab the area every hour for ten hours for one day. In three days' time there was manifest improvement in the local condition. The same treatment was renewed May 10, 14, and 21. At the end of three weeks after the first application all

whole tongue looked much more hearsome induration still persisted about to site of the original nodule. The patient is no symptoms of poisoning. It was remaiable that such a rapid change was brough about in a condition that had lasted in twenty years, especially when the lesion was not a bit benefited by iodides or mercury.

## REVIEWS.

SERUM DIAGNOSIS OF SYPHILIS AND LUETIN RE-ACTION. Together with the Butyric Acid Test for Syphilis. By Hideyo Noguchi, M.D., M.Sc. 23 Illustrations, of which 17 are in Colors. Third Edition. J. B. Lippincott Company, Philadelphia and London, 1912. Price \$3.00.

The first edition of this work was reviewed in this journal for May 15, 1911, and the second edition in that of February 15. 1912. The present—third—edition is dated October, 1912, the first edition having appeared in February, 1910, and the second in February, 1911. The rapidity with which the editions have succeeded each other has enabled the author to keep the volume up to date. The text of the present edition has been increased by two chapters; one, dealing with the specific complement fixation of syphilis, embraces 8 pages of new matter; the second chapter, 54 pages, dealing with the luetin reaction, embraces the largest amount of really new text. deals particularly with newer phases of the subject made possible by cultivation of the treponema pallida. The author describes the preparation of luetin and its use for diagnostic purposes. The colored plates illustrating the reaction are unusually good. Patients affected with disease of the central nervous system yield less constant results than to the Wassermann reaction. Twentyseven of 72 cases of general paralysis gave no reaction, and only three of five cases of tabes reacted. In the primary and secondary stages of syphilis the luctin reaction is absent or very mild, becoming more marked after energetic treatment. The luetin test is especially valuable in latent and tertiary syphilis. Obstetricians will be glad to know of its value in the diagnosis of latent syphilis in pregnancy. It would have been helpful to individuals purchasing the book and not having ready access to files of journals containing the writers' articles, if the technique by which the treponema is cultivated had been described more fully. It would seem to the reviewer that when such alien words as "Unstimmung" (p. 177) are introduced they should have been incorporated in the glossary, which in the present volume is identical with that of the preceding edition. The bibliography has not been brought up to date, and in this respect the author does more injustice to himself than to his contemporaries. Noguchi's Serum Diagnosis of Syphilis remains a clear, practicable exposition of the subject, and even those who do not agree in all respects with the enthusiastic author must recognize the inherent value of his contribution. W. M. L. C.

ELEMENTARY BACTERIOLOGY AND PROTOZOÖLOGY, THE MICROBIOLOGICAL CAUSES OF THE INFECTIOUS DISEASES. By Herbert Fox, M.D. Illustrated with 67 Engravings and 5 Colored Plates. Pp. 237. Lea & Febiger, Philadelphia and New York, 1912.

The writing of small, succinct, clearly expressed epitomes, adapted to the uninitiated, is no easy task and rarely is the result entirely satisfactory. The compiler's skill in selecting just what had best be included and the art of presenting it in easily comprehended language tests the ability of even veteran authors. On examining such book the

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natural questions that arise are: Has the author's selection been judicious? Has he clearly stated the facts? and Has he avoided statements that are not facts? Dr. Fox's training and experience in public health and laboratory work make him eminently fitted to meet the standard indicated. With these tests in mind we have carefully gone over the present volume and feel that the author has, to an unusual degree, attained his object. The illustrations are well selected and judiciously disposed. For beginners exhaustively detailed legends are necessary, and for the most part such are supplied. The language used is clear, simple English, usually easily within the comprehension of nurse or layman of average intelligence. The book is printed on unnecessarily heavy paper, and consequently the volume is needlessly bulky. The type selected is especially commendable, and on the whole the bookmaking is better than in most publications of its kind. The volume can be cordially

DISEASES OF CHILDREN. A Practical Treatise on Diagnosis and Treatment. By Benjamin Knox Rachford, M.D. D. Appleton & Company, New York, 1912.

W. M. L. C.

recommended.

It can be said with truth that the name of no man who lives west of the Alleghenies is more closely associated with the subject of Pediatrics than that of the author of this volume. For many years he has made contributions to medical literature dealing with children and has made special investigations into the field of autointoxication. His design is in this volume to present information which will enable the student and practitioner to get a good grasp of the subject of diseases of children. For this purpose he has divided it into eighteen sections, including in section 17 diseases of the ear and in section 18 diseases of the skin. These parts of the body are very frequently diseased during childhood, and should be thoroughly considered in a book of this type. Dr. Rachford has also seen to it that the volume is copiously illustrated. no less than 107 illustrations in the text with six plates being introduced.

After a series of four chapters dealing

with the child in connection with its hygiene, growth, and development, its examination and the therapeutics of infancy and childhood, he considers in five chapters the newborn, in five chapters infant feeding, and in fourteen chapters diseases of the digestive system, following this with four chapters upon nutritional disorders, the infectious diseases which are common to childhood, including syphilis and rheumatism, and then goes on to diseases of the respiratory system, of the heart, of the blood and ductless glands, of the genito-urinary system, and of the nervous system.

We notice that a very large amount of space is devoted to the treatment of the various diseases which are discussed. This will undoubtedly increase the popularity of the work, the more so as the advice which is given is correct and practical. If, however, the author can persuade his patients to take the mixture named on page 257, which he originally devised for the relief of autointoxication manifesting itself by migraine, he must have persuasive powers of a high degree. However efficacious this mixture may be as a therapeutic agent, its taste to an adult demands all his courage if it is to be taken a second time. If we were asked to pick out one of the best chapters in the book dealing with treatment, we should say that it was that which discusses the treatment of chronic valvular disease in childhood.

FOOD IN HEALTH AND DISEASE. By Nathan S. Davis, Jr., A.M., M.D. Second Edition. P. Blakiston's Son & Co., Philadelphia, 1912. Price \$3.50.

While it is true that some ten or fifteen years ago American medical literature contained almost nothing upon this topic, in the sense of volumes dealing with it alone, during the last decade there has been no excuse for the physician claiming that he did not have the opportunity of gaining information upon this important subject. The present volume, which is, in large part, the text of an article in a System of Physiological Therapeutics, edited some years ago by Dr. S. Solis Cohen, has, in its present form,

been, in part, brought up to date. Altogether the author uses some 427 pages in the consideration of his subject, first dealing with foods in health from their physiological standpoint, and then taking up the different forms of feeding which are necessary in disease.

Without doubt physicians do not study this subject with the care which is desirable. The wonderful ability of the average individual to adjust himself to the food which is given him even when he is sick leads many physicians to regard dietetics as of comparatively little importance unless they are brought face to face with some disease like diabetes in which dietetic treatment may be said to be the whole thing. The same remark may be made concerning the disorders of infancy, for even when the disease primarily does not affect the digestive tract, the chief chance of the child usually depends upon its ability to properly receive and assimilate food. Accurate and fairly full directions are given whereby proper dietetic measures can be carried out in almost all affections.

Concerning the use of coffee, a subject which is so widely discussed at the present time, it will be noticed that the author is evidently in favor of this beverage, although he admits that dyspeptics generally cannot drink it safely if cream and much sugar are added to it. The information which is given concerning alcohol does not represent the most recent researches, since the studies of Benjamin Ward Richardson and the elder N. S. Davis cannot be said to represent modern investigations concerning this subject.

A PRACTICAL MEDICAL DICTIONARY. By Thomas Lathrop Stedman, A.M., M.D. Second Revised Edition. Illustrated. William Wood & Co., New York, 1912. Price \$4.50, Plain; \$5.00 with a Thumb-letter Index.

There are now so many excellent dictionaries of moderate size, and yet sufficiently comprehensive, that it is difficult to say that one excels the other. The present volume is well printed and possesses many excellent features. It includes not only the words used in medicine, with their derivation and

pronunciation, but also dental, veterinary, chemical, botanical, electrical, life insurance, and other special terms, with anatomical tables of the words in general use and those sanctioned by the Basle Anatomical Convention. It also gives the pharmaceutical preparations official in the United States and British Pharmacopæias and those contained in the National Formulary, with chemical and therapeutic information as to mineral springs of America, and a comprehensive list of synonyms. Although it contains over a thousand pages, by the use of proper paper its bulk is not excessive, and a wellmade flexible binding does still more to render it easy to handle. Altogether it is a credit to its author, the publisher, and to American medicine.

New ASPECTS OF DIABETES. Pathology and Treatment. By Professor Dr. Carl von Noorden. E. B. Treat & Co., New York, 1912. Price \$1.50.

From time to time during the last five or six years we have reviewed the other small volumes from the pen of von Noorden dealing with obesity, nephritis, saline therapy, diabetes, and reduction cures in gout. The present volume represents the lectures delivered at the New York Post-Graduate Medical School in October, 1912. He does not attempt to give the literature of the subject nor to quote to any extent the views of other writers upon this subject. It is rather a story of what we know in regard to this important disease at the present time presented by one whose name has become closely associated with its study. One of the chapters dealing with acetonuria, and its influence on the treatment of diabetes mellitus, represents a lecture delivered before the St. Louis Medical Society, September 30, 1912.

HIMSELF, TALKS WITH MEN CONCERNING THEM-SELVES. By E. B. Lowry, M.D., and Richard J. Lambert, M.D. Forbes & Co., Chicago, 1912. Price by mail \$1.10.

We suppose every medical man picks up a book dealing with topics of this character with considerable doubt as to whether it is possible to deal with them in a manner which will make the volume popular with the laity, and yet adequately present the subject from the medical point of view. Possibly this is because the subject is such a difficult one to deal with. As we look over the pages of the book we find much that certainly can be highly commended, although we confess from time to time that the terms which are used do not strike us as being particularly happy. If the volume, with the others which the author has written upon cognate subjects, can do anything toward adjusting this difficult problem of the day, and for that matter of all preceding days, its function will have been well performed.

A MANUAL OF MEDICINE. By A. S. Woodwark, M.D., M.R.C.P. Henry Frowde and Hodder & Stoughton, Edinburgh, Glasgow, and London, 1912. Oxford University Press, New York, 1912. Price \$3.75.

The author tells us in his preface that in contributing this little book to the enormous mass of medical literature at present in existence he has tried to fulfil a twofold purpose, namely, to supply a vade-mecum for the student clerking in the wards or in the out-patient department, and a convenient reference book for the busy practitioner. That the author has succeeded in rather a difficult task is soon apparent as we go over the text, which of necessity suffers somewhat from the condensation to which it has been subjected. That it is a volume which can be turned to when in a hurry and picked up with the idea of getting definite, though limited, information in regard to subjects usually considered in larger text-books of medicine is certainly true.

A TREATISE ON HYGIENE AND PUBLIC HEALTH. With Special Reference to the Tropics. By Birendra Nath Ghosh, L.M.S., and Jahar Lal Das, L.M.S. With an Introduction by Colonel Kenneth MacLeod, M.D., LL.D., F.R.C.S. Hilton & Co., Calcutta, 1912. Price 5s.

India is one of the countries of the world in which sanitation is all-important for reasons which are very obvious. The authors have not attempted in this volume to give all the information which is found in the more exhaustive works like that of Parke, but have tried to produce a small working manual which will be of value to the public

health officer and the practicing physician. There are 20 chapters in the volume, which, however, covers only 369 pages. chapters include water, air, ventilation and cooling, offensive trades, soil, houses and buildings, and diet, the disposal of refuse and of sewage, and infections, with a chapter upon the infectious diseases which are common in India. There is also a final chapter, which is brief, upon vital statistics. As is indicated in its title, the volume is especially designed for use in the tropics, and therefore is more thorough in its discussion of hygiene in hot climates than it is of hygienic propositions which must be met in the temperate zone.

THE MEDICAL RECORD VISITING LIST FOR 1913. William Wood & Company, New York, 1912.

The Medical Record Visiting List contains, as usual, a considerable amount of information in small print in its opening pages. For sixty patients a week, with or without dates, its cost is \$1.50; for thirty patients, with or without dates, \$1.25; for ninety patients a week, with dates only, \$2.00. It also comes in a number of other "extra quality" forms varying in price from \$2.50 to \$4.00. We have referred to it in previous years as being an excellent list, and all of its good qualities are maintained.

THE PHYSICIAN'S VISITING LIST FOR 1913. P. Blakiston's Son & Co., Philadelphia, 1912. Price \$1.25.

This is the sixty-second year of the publication of this List. It occurs in four styles for recording from 25 to 100 patients a week, also in a perpetual edition, and finally in a monthly edition. It is the smallest and most easily carried of all the visiting lists made for the pocket.

A System of Surgery. Edited by C. C. Choyce, B.Sc., M.D., F.R.C.S. Pathological Editor J. Martin Beattie, M.A., M.D., C.M. In Three Volumes. Volume II, Illustrated. Cassell & Company, Ltd., London, Toronto, New York, and Melbourne, 1912.

This most useful system, admirably illustrated, in one instance by an x-ray of a toy bicycle impacted in the esophagus, is devoted to Affections of the Breast, the

Spleen, the Gastrointestinal Tract together with the Associated Organs, the Urogenital Tract. In treating of cancer of the breast Handley advises what he calls his own method, consisting in a ring incision 4 or 5 inches in diameter accurately centering about the growth, tailing off into diverging incisions above and below with a curvilinear cut to give free access to the axilla; and a further skin division allowing of free access to the deep fascia over the upper abdominal wall. For the lymphatic edema of the arm which sometimes follows operation he advises his method of lymphangioplasty, which consists in the subcutaneous insertion of No. 12 tubular silk, forming two long U-shaped lines each composed of two threads, one draining the front of the arm and the other the back, the bend of the U lying immediately above the wrist. The silk threads are brought in a radiating direction into the subcutaneous tissues of the back. the free ends terminating in the scapular region.

Gordon advises for splenectomy a vertical incision on the border of the outer rectus. This article is a most serviceable one, giving an excellent résumé of the surgical affections of the spleen.

Owens's description of the operation for Cleft Palate is excellent, and Clayton Green's section on the Surgery of the Tongue is especially commendable. From the standpoint of therapeusis more space might have been devoted to esophageal lesions.

As might have been expected, there is a careful and accurate summarization of lesions of the stomach and duodenum by James Sherren, evidencing a thorough knowledge of recent contributions on this subject. Miles is to be congratulated on the manner in which he has handled a difficult subject—Affections of the Intestines.

The section devoted to the Liver, Gallbladder, Bile and Pancreas is notable for the thorough manner in which the subjectmatter is considered and its astonishing brevity. It is by Turner.

The book throughout is marked by a careful study and intelligent selection from modern literature, and represents as well as this can be done a skilful condensation of the accepted teaching of the day.

GONOCOCCAL INFECTIONS. By Major C. E. Pollock and Major L. W. Harrison. Henry Frowde, Oxford University Press, 1912.

This book, its authors state, is meant to give a concise account of our knowledge of gonococcal infections. As a prophylactic application is mentioned 30 per cent of calomel in normal fat applied to the glans penis and a small quantity introduced into the meatus, after which the organ is gently massaged. As to the disinfection of clothing, it is stated that provided the latter be thoroughly dried before being sent to the laundry no especial disinfection need be undertaken. The section on Pathology is adequate for every-day use. It is noted that at 40° C. the gonococcus dies in a few hours, however gradually the temperature may be raised, and that it may be cultivated from infected bath water for twenty-four Its staining properties disappear after eight hours in non-albuminous urine, and it is destroyed at once by drying. The organism dies in the presence of the B. pyo-When growing under natural conditions the gonococcus is not so sensitive to rise of temperature.

There is a section and discussion on conditions governing infection and the pathological changes produced by the gonococcus, and upon the biological relations of gonococci to the tissues, and upon the laboratory diagnosis of an infection. Vaccine serum therapy is briefly but admirably discussed. Thereafter is a clinical study of the disease as it develops and a most excellent discussion of treatment. The book closes with a chapter on Gonorrheal Septicemia and its Manifestations, including certain formulæ used in gonorrhea and for staining purposes.

This work is thoroughly to be commended, being marked by sound common sense and by a clearness of judgment evidently based on an enormous experience. Indeed, this is suggested by the fact that both authors belong to the Royal Army Medical Corps.

REVIEWS. 907

A MANUAL OF SURGICAL TREATMENT. By Sir W. Watson Cheyne, Bart., C.B., D.Sc., LL.D., F.R.C.S., F.R.S., and F. F. Burghard, M.S. (Lond.), F.R.C.S. New Edition, Entirely Revised and Largely Rewritten, with the Assistance of T. P. Legg, M.S. (Lond.), F.R.C.S., and Arthur Edmunds, M.S. (Lond.), F.R.C.S. In Five Volumes: Vol. III. Lea & Febiger, Philadelphia and New York, 1912.

This second edition of Cheyne and Burghard's Surgical Treatment, revised practically to date as it is, accentuates particularly the minutiæ of treatment not found in the ordinary text-book, often for life unknown to the practitioner who has not had the advantage of a prolonged hospital interneship. The treatment described by the authors is that which by practical experience they have found to be the best, and those methods are given so fully and clearly that they may be applied by one not previously familiar with them. This present third volume includes the Surgical Affections of the Joints, of the Spine, of the Head and Face, and of the Auricular and Parotid Regions. The major surgical problems are most instructively considered. In the main the teaching is strictly in accord with the latest accepted knowledge on the subject. The work is surely to be commended for the use of those not only inexperienced in surgical procedures, but those daily busied in operative work. The illustrations are excellent, abundant, and elucidating to the text. This is by no means an encyclopedic review of all treatments, but an admirable personal choice of the best.

THE SURGERY OF THE RECTUM FOR PRACTITIONERS. By Sir Frederic Wallis. Henry Frowde, Oxford University Press, London, 1912.

This book, published after the death of its distinguished author, practically represents a second enlarged edition of the volume which first appeared in 1906. Its purpose, as was that of its predecessor, is to present modern surgery of the rectum in a practical condensed form to young surgeons and practitioners. Chapters are devoted to Anatomy of the Sigmoid and Rectum, the Examination of Patients, and Symptoms of Rectal Disease. The commoner affections of the lower bowel are systematically taken up and described with remarkable brevity

and lucidity. It is interesting to note that the author reiterates his view that pruritus ani is nearly always due to a small ulceration or abrasion of the submucous tract which is found usually between the two-sphincters—more often the posterior half than the anterior, and generally near the dorsal midline. None the less he gives many prescriptions for local application. As a final resort, though without enthusiasm, he mentions excision of the anorectal tissues.

In the treatment of hemorrhoids the Whitehead method is commended without qualification, the author stating that he has applied this method to hundreds of patients in the last fifteen years, and he cannot imagine anything better than the results obtained in private practice.

In the treatment of prolapse and procidentia injection of paraffin is not warmly commended.

The book closes with an excellent description of cancer of the rectum, with a final chapter on Rectal Diseases of Children, including the ordinary developmental faults.

A TEXT-BOOK ON THE PRACTICE OF GYNECOLOGY. By William Easterly Ashton, M.D., LL.D. Illustrated by John V. Alteneder. Fifth Edition, Thoroughly Revised. W. B. Saunders Company, Philadelphia and London, 1912.

This, the fifth, edition of Ashton's Gynecology, representing a thorough revision and the incorporation of all that is new and established in the last two years, is deserving of even higher praise than its predecessors. It is worthy of note that in this book there is a most satisfactory and minute discussion of both the medical and surgical aspects of injuries and diseases considered, and throughout in the choice of methods tobe pursued there is an expression of individual judgment and a clear perception of the end to be attained in the simplest, safest, and most efficient way. This is perhaps one of the basal reasons for the popularity of the work among students, general practitioners, and technicians. It is truly what it purports to be, a Practice of Gynecology designed to help those whose purpose is the curing of their patients.

The General Technique of Gynecological Examinations, Including Laboratory Methods, the Blood in Relation to Surgery, Examination of the Abdomen and the Rectum, the Use of X-Rays in Gynecology, Hydrotherapy, Indoor Exercises, Saline Injections. Diet, are considered in a manner so sound and thorough as to make the teachings invaluable. There then follows a discussion of the various diseases on an anatomical basis, beginning with the Vulva and ending with the Uterine Appendages. Diseases of the Urethra, Bladder, and Ureters are next considered. To the general surgeon it is somewhat of a satisfaction to find that no elaborate discussion of truly renal affections is included.

Among the headings which indicate mines of useful information are Menstrual Disorders, Genital Fistulæ, Sterility, the Pelvic Floor, Antisepsis in Hospitals, Technique of Minor Operations, Antisepsis in Private Houses, Appendicitis and Diseases of the Kidney.

A PRACTICAL TREATISE ON FRACTURES AND DISLOCATIONS. By Lewis A. Stimson, B.A., M.D., LL.D. (Yalen). Seventh Edition, Revised and Enlarged. Illustrated. Lea & Febiger, New York and Philadelphia, 1912.

This new edition of Stimson's well-known book embodies on the whole the teachings of its predecessors with such additions as recent experience has shown ap-

plicable to the therapeutics of old dislocations and the operative reduction and fixation of fractures. There are added new sections on Fractures of the Small Bones of the Hand and Foot and Fracture of the External Tuberosity of the Femur. Moreover, there are upward of one hundred new illustrations. Throughout the work the conservatism that comes with wide experience is noteworthy, and moreover the pages are illuminated by the clear practical observations of a trained observer. This work is destined to continue, as it began, a standard text-book on the subjects covered by it.

A PRACTICAL TEXT-BOOK OF THE DISEASES OF WOMEN. By Arthur H. N. Lewers, M.D. Lond, F.R.C.P. Lond. Seventh Edition, Illustrated. Paul B. Hoeber, New York, 1912.

This, the seventh, edition of Lewers's work, evidently intended primarily for students and representing considerable enlargement over its predecessors, embodies an excellent symptomatic grouping, a clear descriptive power, and a choice of surgical procedure or other curative means always sound and usually in touch with the latest thought. It would be difficult to imagine a more careful and serviceable condensation of gynecological knowledge and practice. To those who are occasional gynecologists the work should prove most valuable. To those habitually so, useful.

## CORRESPONDENCE.

#### LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The long-expected Report of the Royal Commission on Divorce set up just three years ago has at last made its appearance. As was expected, the report discloses a fundamental difference of opinion among the Commissioners on the question whether the grounds for divorce in this country should be extended. This difference of opinion has led to the issue of two reports, one signed by nine of the Commissioners,

constituting the majority report, and the other signed by the remaining three Commissioners, the minority report. The majority recommend in the first place that the two sexes should be on an equal footing as regards divorce. Divorce should be obtainable on the following grounds: Misconduct, desertion for three years and upwards, cruelty, incurable insanity after five years' confinement, habitual drunkenness found incurable after three years, imprisonment after a commuted death sentence. Further recommendations are that facilities should be given to enable people of limited

means to obtain divorce, that power should be given to declare marriages null in certain cases, that restrictions should be placed on the press publications of divorce cases, and that such cases should be heard by judges without a jury. The minority agree that there should be an equality of the sexes, but emphatically recommend that the grounds for divorce should not be extended. They agree that further facilities should be given to poor litigants, though less extensive than those recommended by the majority. They agree to the limitation of divorce reports, and that marriage should be declared null in the specified cases set out by the majority. The minority declare that the evidence given before the Commission was far from showing any general demand on the part of the poorer classes for divorce on other grounds besides that of misconduct. They point out that 61 per cent of marriages in England are solemnized in church, and that only 20 per cent are purely civil. They fear that the increase in the facilities for divorce will lead to greater recklessness in contracting marriage, and that the loosening of the marital tie will lead to the same disasters as have been experienced in France and America. The English and American people have so much in common that it is only reasonable to suppose that the results of easier divorce will be much the same in the two countries. The report says: "It is significant that no witness has been able to tell us of a country where as the result of greater facilities for divorce public morality has been promoted and home life made more settled."

The two reports have been received with great interest by the public, and the question arises as to when any legal reforms will become effective. In 1850 a similar Royal Commission was appointed to consider the subject of divorce, but it was not until 1858 that legislation resulting therefrom became operative. It is likely therefore that some years will pass before some or any of the recommendations of the Commissioners are put into practice, for any government which proposes legislation on the subject will find it a thorny one to tackle, as a very large body of opinion will be found to support the

findings of the minority report, which, beyond recommending the equality of the sexes, practically deprecates any change in the present legal position of divorce.

A most interesting case of so-called automatism has lately been tried in the Law Courts. A young engineer stole a friend's motor car; after arrest he appeared to undergo a mental revulsion, and was quite incredulous when told of his offense. It was urged in his defense that he suffered from attacks of mental automatism, and could therefore not be held responsible for actions performed under the sway of another personality. Such a case has never been decided by a court of law in this country before, so no precedent could be quoted. The jury found the prisoner guilty, and a fairly heavy sentence was passed. In passing sentence the judge instanced the story of Dr. Jekyll and Mr. Hyde and said it was a pity that Dr. Jekyll was never tried for the crimes of Mr. Hyde, as that would have made a sort of precedent, and they could have seen what Dr. Jekyll's defense really Naturally since the trial was conwas. cluded there has been a great deal of discussion as to the justice of the sentence passed, for it is obvious that an authoritative decision could only be reached by a jury of medical experts. But even if the plea of automatism was fairly established it is difficult to see what form of punishment could be devised to fit the case, as the prisoner ought to be treated as a patient rather than as a criminal. It is easy to see what confusion may arise if this line of defense is abused.

Another interesting medicolegal case in the courts has been the action brought by a Mr. Stevens against the British Medical Association to recover damages for an alleged libel in a book called "Secret Remedies" printed and published by them. Stevens has been selling for some years a "Stevens" remedy called Consumption Cure," and he complained that in this book the defendants had described him as a swindler and a quack. Mr. Stevens said that he himself had been cured of consumption in South Africa by the infusion of some herb that was supplied to him by a native. Afterward the plaintiff obtained a supply of the plant and made therefrom a medicine which he advertised as "Stevens' Consumption Cure." Analysts for the defense declared that the medicine was nothing else than a decoction of a common form of astringent known as krameria. The plaintiff was able to bring forward several medical witnesses, who spoke favorably of his preparation, but in spite of this the jury took an unsympathetic view of his case and the hearing was ended by the jury failing to agree as to their verdict.

The recent defeat sustained by the government on the Home Rule Bill has had a disastrous effect upon the prospects of the Mental Deficiency Bill. Owing to the loss of parliamentary time involved some measure had to be dropped, and no further progress will be made with the bill this session. It is a matter of regret that the choice fell upon this bill, for good progress had been made in committee, and the government had promised that time should be found to pass the bill into law. It is possible, however, that time may be found early next year to complete the remaining stages.

A new hospital for women only, managed and officered by women, is about to be built in South London. The idea is to fill the gap between ordinary hospitals and expensive nursing homes, so that patients from the middle classes who are debarred from hospital treatment and are unable to pay consultation fees may yet have the benefit of expert advice by paying small sums according to their means. The charge for a bed in a private ward will be graduated from one to three guineas per week. In the consultative department any patient can consult the honorary staff on the production of a card from her own doctor. A free outpatient department for women of the poorer classes will also be opened shortly.

The improved terms offered to the medical profession under the National Insurance Act have not met with a great deal of favor. Recently the special representative conference called to decide the course of action with regard to the new proposals

passed a resolution declining to take service under the Act and existing regulations. Subsequently a resolution to reopen negotiations with the government was passed by a very small majority, 23 in a card poll of over 18,000. A committee was appointed to interview the Chancellor, and great stress will be laid upon the withdrawal of lay control, as this is considered most derogatory to the profession, and it is thought that if the Chancellor would give way on this point much of the present hostility would disappear. Very little time is now left for negotiation, as the application of the medical benefits promised to insure persons become due on January 15 next, and just at present settlement of the impasse seems as far off as it did a year ago.

#### PARIS LETTER.

BY CHARLES G. JARVIS, M.D.

Life in the medical department of Paris University does not begin before the early part of November. At that date the official lectures are resumed and practical work starts afresh in the various laboratories. As the courses, both theoretical and practical, come to a close at the end of June-July being given up to examinations—the academical year in Paris lasts but eight months, a shorter time than in any other medical school. But apart from the official teaching, many special courses, chiefly of a practical nature, are given by assistant professors and by the junior members of the hospital staffs. They are really postgraduate courses of the greatest value, for the clinical and pathological material in Paris is unrivaled, and the lucidity of French teaching is a well-recognized fact.

Unfortunately it must be confessed that heretofore the postgraduate courses here have not been systematically organized. Most of them are advertised but a short time in advance; the result is that the foreign doctor seldom knows a long time ahead what period he can most profitably

spend in Paris for instruction in any given subject or subjects. Efforts are now being made to remedy this defect. The matter has been taken up by some of the most influential members of the University Council, and it is hoped that shortly a scheme will be adopted by which different courses will be grouped together at fixed periods, so that a foreigner will find in the French capital opportunities for postgraduate instruction on a par with those afforded by Berlin or Vienna. It is even hoped that some of the courses may be held in English, for the benefit of British and American students.

The above was one of the topics ventilated at the last annual dinner of the Continental Anglo-American Medical Society held in Paris on October 12. This society, which was founded in 1889, forms a bond of union between British and American medical men practicing on the Continent of Europe and in Northern Africa (Egypt and Algeria). It aims at including only men of good professional reputation. Its membership is now 113. At the last dinner the chair was occupied by Sir Bertrand Dawson, K.C.V.O., of London. Forty members and guests were present: among these were Sir Dyce Duckworth, Bart., of London; Dr. Barton Jacobs of Baltimore, Professors Chauffard, Widal, and Vaquez of Paris. It may be mentioned here that information concerning medical work in Paris is gladly supplied to American inquirers on applying to the Hon. Secretary of the Society, 42 rue Villejust, Paris.

The award of the Nobel prize to Dr. Alexis Carrel of the Rockefeller Institute, New York, has been very favorably received in France, not only because of the fine work accomplished by that investigator, but also because he is a graduate of Lyons University, which thus takes a share in the honor bestowed on her distinguished alumnus.

An animated discussion is now proceeding at the Paris Academy of Medicine on the compulsory notification of tuberculosis. Parliament had requested the Academy's opinion on that vexed question, and at the meeting of October 8 Professor Letulle presented a very elaborate report. Notifi-

cation of tuberculosis is compulsory in Denmark, Norway, Germany, and, with some restrictions, in England, and Dr. Letulle does not see why it should not be so in France. He proposes, therefore, that notification be obligatory in cases of pulmonary phthisis, such notification to be made by a member of the patient's family, or in default by the landlord, or failing both, by the medical attendant. To this declaration would be annexed a certificate, signed by the doctor in charge of the case, and both documents would be sent to the Sanitary Inspector, thus insuring secrecy. corollary, disinfection would be compulsory. In the case of paupers it would be carried out by the state, which would also contribute to the maintenance of the patient and his family when necessary.

The proposal has aroused a veritable storm of opposition in medical circles. On October 11 the Society of Medical Practitioners in Paris unanimously declared itself against compulsory notification, and at the last meeting of the Academy October 22, Professor Robin eloquently inveighed against any such measure. He recommends disinfection of all lodgings after the death of any of the inmates, whatever the cause of death, and disinfection of premises when vacated by tenants unless a medical certificate be forthcoming showing that there has been no contagious disease among the members of the household. Dr. Robin's proposal certainly seems more practical, and it will meet with ready acceptance at the practitioners' hands. But it is recognized that at best disinfection is but a small weapon in the fight against tuberculosis. This allimportant medical and social problem will engage the attention of the Academy at an early date.

No less than six important congresses have met in Paris this month. Two of these were international gatherings, namely, the Congress of Comparative Pathology and that of Pediatrics. The abstention from the latter of British and American physicians was the subject of much comment, more especially as no explanation for this abstention was forthcoming. All the con-

gresses were well attended and were the occasion of many interesting papers and discussions. It is impossible to notice them here, but the attention of the profession at large will certainly be drawn to the admirable results of antityphoid inoculation reported by Professor Vincent of the Military School of Medicine in Paris. More than 20,000 inoculations have now been performed with Dr. Vincent's vaccine; not one accident has been reported. As for the results of this preventive treatment, they are really conclusive. A portion of the French army in Morocco was vaccinated last year; not one case of typhoid occurred, whereas among the other troops the number of sick amounted to 6.4 per 100.

An equally conclusive demonstration is afforded by the recent epidemic of typhoid in Avignon (July and August). The garrison there numbers 2000 men, of which 1366 were vaccinated; not one showed the slightest symptom of typhoid, whereas of the non-vaccinated soldiers 155 were affected, and of these 21 died.

The splendid results obtained by Vincent's vaccine have led to the building and equipment of a special laboratory at the Val de Grâce (Military School of Medicine), which was opened by the Minister of War on October 16. This laboratory supplies antityphoid vaccine free to all medical men.

Visitors to Paris are familiar with the Bellevue Palace Hotel on the heights overlooking the Bois de Boulogne. It is a spacious and modern building admirably situated and provided with large windows freely admitting air and sun. It has often been remarked that it would make a perfect sanitarium. It is now about to be turned into an institute for medical research, owing to the liberality of an American philanthropist, Mr. Paris Singer. A committee will shortly be appointed to organize and superintend the new institute, which will be equipped in a very complete and up-todate manner. Scientists of repute are to be placed at the head of the several departments. Students of all nationalities are to be admitted, and the researches are to bear

chiefly on the cancer problem. The donor has calculated that the initial outlay will amount to \$400,000. Patients of interest to medical research are to be admitted, but whether payment will be made for treatment has not yet been decided.

The invasion by foreigners of the medical profession in France is ever a sore point with our French confrères, and the topic was again discussed at the October meeting of the Paris Syndicate of Medical Practitioners. The posts of externe and interne in the French hospitals are obtainable only through competitive examinations open to students of all nationalities regularly immatriculated at the various schools of medicine. It would seem that a comparatively large proportion of these posts are annually won by foreigners (10 per 100 at this year's examinations for the externeship and interneship in the Paris hospitals). Again, quite a number of qualified men, it appears, succeed in establishing themselves in practice despite the stringent law by which no medical man can practice in France unless he has been through the whole curriculum, beginning with the "Baccalaureat." This law is practically a prohibitive one. Yet it is claimed that within the last few years some foreigners have obtained exemption from the preliminary (and to them the most difficult) examina-These foreigners are chiefly Russians, Rumanians, and Greeks-no British or American names are to be found on the list of these lucky few. The French practitioners are very wroth at what they consider an infringement of their rights. remains to be seen whether this will not prove to be a short-sighted policy. Anglo-American patients are for the most part very keen on being attended by doctors of their own nationality. Under existing conditions the number of English and American practitioners in France is bound to decrease to the point of extinction, and the French health resorts and watering-places will suffer in consequence. But this aspect of the question does not seem as yet to have struck the minds of our ultra-nationalist confrères.

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